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SANITATION OF FLOOD-STRICKEN TOWNS AND CITIES.

WITH SPECIAL REFERENCE TO CONDITIONS OBSERVED IN RIVER TOWNS AND CITIES OF KENTUCKY.

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Besides the considerable loss of human life and the tremendous destruction of property immediately caused by floods, such as occurred in the Ohio and Mississippi Valleys this spring, there are occasioned in many of the towns and cities of the flooded territory sanitary situations which give rise to well-founded apprehension.

The sanitary situations obtaining in the different flood-stricken towns and cities, though varying in degree, present a striking similarity in kind.

(1) Many people are compelled to abandon their homes, temporarily at least, and must be provided with places of refuge. Some may be domiciled in camps established especially for the purpose and others in private homes or public buildings located in parts of the town out of water. In any event, considerable numbers of people who ordinarily would not be closely associated are brought into propinquity, and the danger of the spread of whatever communicable disease may exist among them is increased.

(2) Food and clothing, ample in quantity and suitable in quality, are needed for those who are, for the time being, practically destitute. Under the generally upset conditions it is difficult to have the food supplies prepared and served with even the cleanliness usually exercised in the average home in a municipality. Therefore the likelihood of infection being conveyed by foods may be somewhat increased.

(3) The pumping station for the public water supply with its purification plant, if there be one, may be incapacitated. Many of the wells and cisterns may be overflowed and contaminated with the flood water, which, though capable by its tremendous volume to effect great dilution, suddenly has gathered up in its course much potentially dangerous contaminating matter. Deprived of the usual, and perhaps reasonably safe, drinking-water supplies some of the people are apt to drink almost any water accessible, includ-

ing the flood water flowing through the streets, even if it be somewhat objectionable in appearance, odor, or taste. Thus, the danger from water-borne infections, particularly that of typhoid fever, may be markedly increased. Not a large proportion of people who are passing or who have just passed through the obvious perils of a flood and are busied gathering together the few remains of property left them can reasonably be expected to heed warnings to boil water for drinking. In flood times the fuel and labor needed for boiling water are at a premium for other purposes. The placarding of a town, in such times, with warnings to boil water may relieve the authorities of some feeling of responsibility, but, in the experience of the writer, few of the people actually in a position to do so carry out such instructions consistently.

(4) Sewage may be backed up into basements and houses, as the water rapidly rising in the river interferes with the discharge from the sewers. Cesspools may be overflowed and privy contents washed around. Thus the dissemination of excreta-borne infections may be increased. In the parts of the town covered with water to a considerable depth, however, the sewage which backs into houses is tremendously diluted, and much of this diluted sewage, the overflow from cesspools and the washings from privies, is carried away as the flood water flows through or gradually recedes from the town. In fact, some of the towns immediately after the flood may be in better sanitary condition in respect to the dissemination of human excreta than they have ever been before.

(5) Insanitary privies and cesspools, always a menace to the health of a community, may become particularly dangerous in a flood-stricken city. The greatest danger is not from the insanitary privies which are washed away or under water, but from those which are in use during and subsequent to the time of high water. The whole or a considerable part of the town may be nonsewered. Many of the homes in sewered areas may not be connected with the sewer. In the more elevated parts of the flood-stricken town many of the homes, having no sewer connections but insanitary privies or cesspools instead, may hospitably afford refuge to persons whose homes have been carried away or are in water. Under these conditions, privies and cesspools, insanitary under ordinary usage as a rule, are severely overtaxed and become grossly insanitary.

In the nonsewered parts of the town a large proportion of the outhouses may have been overturned or carried away by the flood. As the water recedes the people return to these sections to rehabilitate and reoccupy their homes, and the scarcity of serviceable toilets is liable to lead to a certain amount of promiscuous polluting of the soil and to a severe overtaxing of the privies which can be used.

The writer found in some of the towns which he visited encampments with inadequate and very faulty toilet arrangements, the privies being loosely constructed and unscreened houses open in back or leaky at back and sides and without receptacles under the seats, the excreta piling up on the surface of the ground or overflowing the trenches under the seats and heavily polluting the surface of the ground for considerable areas around the houses, privies, also of insanitary type, at private homes in the neighborhood being used and overtaxed by persons from the camps who wished to avoid the filthy camp latrines, and the encampments and their environs thus presenting conditions, in respect to the dissemination of human excreta, comparable to those of some of the national encampments during the Spanish-American War.

That some of the flood-stricken towns in which such conditions obtained did not have serious outbreaks of typhoid fever and other diseases caused by excreta-borne infections was probably because the season was early spring instead of late summer, and the periods of encampment were usually short.

(6) Débris and mud in great quantity, containing perhaps a certain number of carcasses of animals and a certain quantity of sewage or contents of cesspools and privies, may be left in the streets, alleys, and yards of the town as the water recedes. While the débris and mud, with an occasional dead animal, are objectionable and the putrefaction of dead animals may give rise to appearances and odors actually nauseating, their importance from a standpoint of infectious, disease causation is usually in the popular mind very much overrated, while conditions such as those pertaining to the water supply and to disposal of human excreta, constituting a very much greater menace to the health of the community, are liable to receive from the people generally much less, and certainly too little, attention.

(7) The houses in the flooded sections in which people have remained during the period of high water or to which people have returned as the water receded may be damp throughout, and the parts which were under water may be grossly soiled with mud left by the flood. Many of the basements and cellars may remain full of water for days after the water has receded from the streets. The heating apparatus for the house may be located in the basement and and therefore be, for the time being, unserviceable. Some houses may not have on the upper floors arrangements for heating, as with grates or stoves. For those which have grates and stoves adequate fuel may be lacking or obtainable only with great difficulty. When heating facilities are at such a premium it is to be expected that many of the people will conserve heat by keeping windows and doors of rooms for living and sleeping closed. Frequent instances of families sleeping—perhaps in damp clothing—in rooms presenting the condi-

tions of "indoor tropics" may be found. Under the conditions of dampness and poor ventilation an increased rate of diseases of the respiratory tract may obtain.

8. The sick, including cases of communicable disease, under the generally upset conditions of affairs may not receive the attention and care that they would in ordinary times, and, in consequence, be apt not only to suffer more, but also to spread whatever infection is among them more extensively. A case of typhoid fever or of scarlet fever, for instance, which would have been kept strictly confined to bed may become under force of the circumstances ambulatory.

Measures Generally Applicable for the Prevention of Outbreaks of Infectious Disease in Flood-Stricken Municipalities.

The work of sanitation in the affected town or city should be placed under the direction of a competent organization clothed with ample authority. A special committee may be appointed for the purpose, but it is decidedly advantageous, when practicable, to have this work directed by a regularly appointed and permanent local health organization, which may continue to have needed sanitary measures carried out after all excitement about conditions immediately resulting from and following the flood has passed. It may be particularly advantageous in some instances to have a skilled sanitarian from the State health department or from the National health service come to advise and cooperate with the local authorities. Apart from any additional technical knowledge of sanitation which the sanitarian from outside the community may bring, the mere fact of his coming may serve to increase intelligent popular interest and confidence in the measures advised.

Among the sanitary measures usually indicated in the flood-stricken towns are the following:

(1) *The establishment and maintenance of good sanitary conditions in encampments for refugees.*—In selecting the camp sites regard should be given to character of soil, topography, accessibility, availability of good water supply and sewerage, and to general sanitary conditions in neighborhood. A loose gravelly or sandy soil is preferable to a clayey one. The gentle slope of a hill affording good natural drainage, and particularly if somewhat sheltered by sursounding hills, has advantages. Nearness to supply stations will save labor and expense of transportation. Safe water supplies should be furnished the encampments. If the city supply is good the piping of it to the encampments is usually advisable. Open wells and springs in or near civilian encampments are particularly liable to contamination. If the water which must be used is of questionable safety, it should be treated under supervision of the camp authorities by boiling or by treatment with hypochlorite of lime. The Waterhouse-

Forbes sterilizer, which has been used extensively in the United States Army, is well adapted for the boiling of water in these camps. If a water-carriage sewerage system is available and sanitary water closets can be installed, one of the greatest difficulties of camp sanitation will be met. Therefore camp sites, so far as practicable, should be selected with a view to having connections with the city sewerage system. Grossly insanitary parts of the city, especially if unsewered, should not be selected for camp sites.

The tents used should afford thorough protection and good ventilation. Such tents for use by flood sufferers appear to be obtainable in ample numbers from State and national military organizations. A trench should be dug around each tent to prevent flooding by rains and the tents should be floored, if practicable.

The camp should be provided with adequate toilet facilities, so that there will be no need for occupants of the camp to use toilets outside the encampment. If a water-carriage sewerage system is not available for the encampment, sanitary privies—that is, privies which are provided with water-tight receptacles for the excreta, and which are so constructed that their contents will not be accessible to flies—should be provided. A good disinfectant solution, such as carbolic acid, 1 part to 19 parts of water, or chloride of lime, 1 pound to 8 gallons of water, should be used liberally on the excreta, and when the receptacles become about two-thirds full, their contents should be removed in a cleanly way, carried to a proper place without the camp, and buried or burned. In the maintenance of sanitary conditions in a camp, no other measure is so important as is the proper collection and disposal of human excreta. For the proper care of the privies an adequate scavenger service should be provided, and its work carefully supervised. The importance of preventing the dissemination of human excreta in a camp much more than justifies the labor and expense of construction and maintenance of sanitary devices, even under the usually trying circumstances attendant upon the establishment of a camp for flood sufferers.

In camps to be occupied for only a few days in localities presenting certain favorable conditions in respect to soil formation, topography, and ground water, there may be used with a reasonable degree of safety deep narrow trenches in the ground, instead of water-tight receptacles for the excreta.

If this compromise system is to be adopted careful regard should be given to the possibility of causing pollution of water supplies, such as wells and springs, in the neighborhood. The contents of the trenches should be thoroughly protected against fly invasion by having screened houses or seats over the trenches. The trenches should be 4 to 8 feet in depth and not more than a foot and a half in width. Disinfectant solution should be used liberally in the

trenches. When the trenches become filled to within 12 to 18 inches of the surface of the ground, the houses over them should be moved to new trenches and the old trenches after liberal treatment with a disinfectant, such as quicklime, be filled and mounded over with earth to a height of several feet above the surface. Another system, which might possibly be feasible under refugee-camp conditions, is to line the trenches daily with some readily inflammable material, such as hay, straw, or shavings, and by the liberal use of kerosene oil to burn out daily the contents of the trenches.

Too much emphasis can not be placed on making the deposits of excreta in camps inaccessible to flies. In every refugee camp which the writer visited this spring there were already, even so early in the season, on pleasant days, some flies busily engaged wherever opportunity presented in traveling from human excreta to human foods. Camps should be kept thoroughly policed, under the immediate direction of some person continuously at the camp and responsible to the authorities.

Garbage and other refuse should be collected in proper fly-proof and water-tight receptacles, removed daily, and properly disposed of by burning or burial. On exposed excreta or garbage Paris green solution may be used to prevent fly breeding or kerosene oil may be used as an insect repellant.

All persons given refuge in the camp should be inspected upon admission and daily while there, so that cases of communicable disease may be detected early, and isolation and other necessary measures be exercised to prevent spread of the infection.

(2) *The securing of a safe and an adequate water supply.*—If there be a public supply, steps should be taken at once to insure its safety and its usual distribution. With a good and freely distributed public water supply in a flooded town a large element of danger from outbreaks of infectious disease is eliminated. If the public supply be readily accessible and regarded as safe, people are nothing like so apt to use water from shallow wells, underground cisterns, and other sources which are particularly liable in flood times to be dangerously contaminated.

Treatment of water with hypochlorite of lime is a great sheet anchor of safety in such emergencies. For most of the towns visited by the writer the application of this treatment to the public water supply was recommended by him and adopted by the waterworks officials. The cost of the treatment is very reasonable, for the majority of water supplies only about 8 pounds of the "chloride of lime" being required for each million gallons of water. The apparatus for applying the treatment is simple and may be installed in a few hours. The solution may be applied as the water enters or leaves a reservoir or as it flows through a conduit or main.

The solution should be applied as the water flows through some place at a known rate, so that the proper amount of the solution will become mixed with a known volume of water. The water supply of a city of 5,000 to 20,000 population may be treated with a very simple emergency apparatus, consisting of three ordinary 50-gallon barrels and a little piping, one of the barrels to be used as a mixing tank for making the solution and the other two barrels to be used as distributing tanks. The hypochlorite treatment probably should not be relied upon to disinfect waters which are highly turbid. A water supply having a high turbidity should be subjected to some clarification process, such as coagulation, sedimentation, or mechanical filtration or some combination of these, before having the hypochlorite treatment applied.

Water in cisterns, if clear or nearly clear, may be treated effectively with hypochlorite of lime. To treat 5,000 gallons of water in a tank or cistern, proceed as follows: Put 1 ounce of good chloride of lime (containing at least 30 per cent of available chlorine) in a vessel containing about 2 gallons of water; shake or stir rapidly for about a minute; let vessel set for about five minutes, so that most of the insoluble part of the lime will settle to the bottom; pour the solution into the cistern and by some mechanical means agitate the water so that the solution will be quickly diffused throughout the volume of water. Water on a still smaller scale—by the bucketful in the private home, for instance—may be treated by the hypochlorite process; add 1 teaspoonful of good "chloride of lime" to 1 pint of water and keep the solution in a tightly stoppered bottle; add 1 teaspoonful of this solution to 2 gallons of water to be used for drinking and stir in quickly; let water so treated stand for 15 to 30 minutes before being used. The stronger solution used in the treatment of water on this small scale is to afford a liberal margin of safety.

Bottles of the hypochlorite solution may be made up and properly labeled at central stations, and distributed to private homes not having ready access to entirely safe water supplies. The application of this method of treatment of water in the private home, while perhaps not furnishing as absolute a safeguard as boiling the water would, has proved to be feasible in some flood-stricken towns. Many people who can not or will not go through the troublesome task of boiling all water for drinking will use the hypochlorite method.

People should be warned against using untreated water from polluted wells and cisterns. Where safer water supplies are available water from shallow (dug) wells and contaminated cisterns should not be used. Such cisterns should be pumped out, disinfected with hypochlorite of lime solution (1 pound to 8 gallons of water) and refilled from subsequent rains. Shallow wells, polluted or obviously exposed to dangerous pollution, should, wherever feasible, be abolished permanently by official action.

(3) *The adoption of safeguards to prevent dangerous dissemination of human excreta in the community.*—Any disorder in the sewerage system occasioned by the high water should be corrected as promptly as possible. As the high water begins to recede the sewerage system as a rule will return to its normal condition.

The main trouble with sewerage systems of flood-stricken towns usually is their lack of extent. A municipality having a complete and properly installed water-carriage sewerage system would not be apt, after being flooded, to present a sanitary situation of much gravity. Conditions associated with insanitary privies and cesspools in nonsewered sections and at homes in sewered sections not connected with the sewers, constitute as a rule the gravest menace to health in a flood-stricken town. In nonsewered sections, temporarily congested by the influx of refugees, additional privies of a sanitary type should be installed. An adequate scavenger service should be provided to dispose of night soil in a sanitary way and an adequate inspection service should be provided to see that the privies are maintained in sanitary condition. As the high water recedes and the people begin to return to the flooded sections to repair their damaged homes, the installation of a certain number of public convenience stations in those sections may be advisable. As the work of rehabilitation begins, proper toilet facilities in the homes should be among the first things to receive attention. Privies carried away by the flood should be replaced with sanitary ones and privies overturned or otherwise damaged should be reconstructed with, usually needed, improvements.

(4) *The treatment of all insanitary privies and cesspools with a liberal quantity of disinfectant solution.*—Since the prompt reconstruction along sanitary lines of all privies will not be feasible as a rule, a considerable safeguard may be secured by a kind of "shotgun" disinfection of all insanitary privies and cesspools in the town. This can be and should be done at once and under official supervision. Squads of laborers with wagons carrying disinfectants and mixing tubs should be sent out to cover systematically the different sections of the town in which there are privies or cesspools. Each privy should be treated with 8 or 10 gallons of disinfectant solution, the solution being applied liberally to the woodwork and the pit under the seat. Among the good cheap disinfectants for such use are (*a*) chloride of lime solution, made by adding 1 pound of good chloride of lime to 8 gallons of water, and (*b*) quicklime solution, made by adding 10 pounds of good unslaked lime to 10 gallons of water. This systematic sluicing of privies should be repeated once every week or 10 days until the faulty privy conditions have been permanently corrected or at least reverted to their normal. Privy pits and cesspools from over which the houses have been carried away should be treated with the disinfectant solu-

tion and filled with earth. Areas around overflowed privies and cesspools, as in alleys and yards, which have been heavily polluted should be soaked with the disinfectant solution.

(5) *The enactment and rigid enforcement of ordinances requiring a prompt report of cases of communicable diseases.*—The prompt discovery of and the enforcement of proper precautionary measures about cases of infectious disease, important at all times, is especially important in the disturbed conditions of flood times. Circular letters should be sent to the physicians calling their attention to the existing or the specially enacted ordinances respecting the report of cases of communicable diseases, and their active cooperation requested. Cases which may be even slightly suspected to be infectious should be treated as infectious until the contrary is known. Hospitalization of infectious cases should be encouraged and demanded so far as may be practicable. Precautionary measures about the bedsides of infectious cases treated in homes should be carried out under official supervision. Visiting nurses should be provided to assist in this work.

(6) *The conducting of a systematic search for the sick.*—In the flooded sections and in the sections congested with refugees, frequent visits—practically a house-to-house canvass—should be made to discover and to render needed assistance to the sick. By this search there may be found cases of infectious disease endangering the community, and also cases of ordinary sickness seriously needing assistance. Visiting nurses are needed for this work, and if they can not be furnished by the town they may be secured by making application to the National Red Cross Association.

(7) *The removal and proper disposal of débris, mud, and dead animals from streets, alleys, yards, and houses.*—A sufficient number of teams and laborers should be provided. This work should be begun as the water begins to recede, because much of the mud may be shoveled or scraped into the receding water and be carried away by the current. Some of the débris may be used for firewood or other purpose. What is useless should be taken to a suitable place and destroyed by burning. Dead animals should be carried to suitable places and disposed of by cremation or by burial. Mud in streets, alleys, and yards should be either washed away with a flushing hose or raked into heaps and hauled away. The sprinkling of air-slaked lime in streets and yards, a measure commonly practiced in flooded towns, does little, if any, good, and may give a false sense of security. Sunshine and air will quickly accomplish whatever surface disinfection may be necessary of mechanically clean streets and yards. If disinfection of the ground surface is attempted, some actual disinfectant (not air-slaked lime) in solution should be employed.

(8) *The securing of concerted action for the cleansing, drying, and ventilation of flooded houses.*—The authorities should instruct the

people generally, through the columns of the local press, through public addresses, or otherwise, about the importance of and the methods for having flooded houses in good sanitary condition before reoccupying them. If a sufficient force of sanitary inspectors has been provided to make it feasible, inspection of flooded houses should be made and permits from the health department to reoccupy required. Basements and cellars should be pumped out. Mud should be scraped and washed out, and after the portions of the houses which were flooded have been rendered mechanically clean the walls and floors should be washed with a disinfectant solution, chloride of lime, 1 pound to 8 gallons of water being well adapted for the purpose.

After being cleaned the houses should be sunned as much as possible, and aired by keeping windows and doors open, and, when practicable, open fires going. Houses should not be reoccupied until reasonably dry and sweet. The people are much better off in a well-managed camp than they would be in damp, poorly heated, and poorly ventilated houses.

(9) *The use of agents for the production of specific immunization against certain infections.*—If smallpox prevail in the community, the people generally who are not already protected by vaccination—including especially those in the encampments and in the congested sections—should be vaccinated as promptly as possible. The only reasonable objection which can be raised against extensive vaccination at such a time is that the soreness of arms may interfere somewhat with the performance of manual labor, for which the circumstances create an unusually great demand. This objection, however, is more than offset by the special danger of extensive spread of the infection as a result of the unusually close association between large numbers of persons. The working efficiency of the community will not be lessened as much by having a certain number of persons incapacitated with sore arms as it will be to have one-tenth or one-twentieth of a like number incapacitated with smallpox.

Antityphoid inoculation, though not possessing all the advantages as a protective agent against typhoid fever that vaccination posesses as a protective agent against smallpox, may be advised. Three injections 10 days apart, and each attended by a certain amount of discomfort, are required to produce the theoretical maximum of protection. The duration of the period of protection is not known. It is supposed to vary in individual cases from six months to several years. The antityphoid inoculations are not supposed to afford protection to persons who are already incubating the infection of typhoid fever. The greatest danger from typhoid outbreaks in flood-stricken communities obtains, as a rule, in the time of high water and in the week or 10 days immediately subsequent thereto. Therefore, the protection

by antityphoid inoculation of any considerable proportion of the population may not be practicable until some time after the period of greatest danger has passed.

It would not seem advisable to undertake in a civilian community compulsory antityphoid inoculation. The method of administering the agent, somewhat cumbersome at present it must be admitted, and the extent of actual danger to be obviated by its use, would need careful consideration before a course of compulsory inoculation could be wisely decided upon. Although it now seems definitely established that antityphoid inoculations give to exposed persons a marked degree of protection against typhoid infection, only a small proportion of persons in the average community, in the present stage of exploitation of this agent, will voluntarily obtain antityphoid inoculation. This appears to be particularly true for flood-stricken communities where temporary incapacitation for work—such as may result from either vaccination against smallpox or inoculation against typhoid—would be especially inconvenient. Other measures—such as the correction of faulty water supplies and the sanitation of faulty privies—for the prevention of typhoid outbreaks will be, as a rule, immediately practicable in flood-stricken towns, and will prevent the spread not only of specific typhoid infection, but also of the other excreta-borne infections. Measures which can be carried out by action of the municipal authorities are much more feasible in flood times than are those which depend for their enforcement upon the voluntary and deliberate action of the individual citizens.

From his recent observations the writer is of the opinion that antityphoid inoculation should be made available and advised in flood-stricken towns and cities, but, like propaganda for the boiling of drinking water, should not be depended upon to the neglect of other and immediately practicable measures.

(10) *The securing of permanent sanitary improvements.*—The inspection of a flood-stricken town will usually bring to light a number of insanitary conditions which existed before the coming of the flood and which need permanent correction. Thus, in usual times, the water supply may have been exposed to gross and dangerous pollution, and not subjected before distribution to efficient purification processes; the sewerage system may have been inadequate, and grossly insanitary privies and cesspools may have been numerous in thickly settled sections; the collection and disposal of stable manure, garbage, and other refuse may have been inadequate and faulty; sanitary inspection, including food inspection, may have been insufficient and the whole local health department undermanned and not provided with funds adequate for efficient service. No opportunity should be lost to point out to the people generally the conditions which, though aggravated perhaps by the high water, should not have been tolerated

even had no flood occurred. The work of sanitation precipitated by the apprehension aroused by the flood conditions may educate the municipal authorities and the people generally to a realization of the feasibility and the advantages of sanitation and thus turn the disaster of flood to permanent advantage for the community.

Observations and Operations for the Sanitation of Flood-Stricken Towns and Cities in Kentucky.

On April 2, 1913, the Surgeon General of the Public Health Service received from the local authorities of Catlettsburg, Ky., an urgent telegraphic request to send an officer to assist in sanitation in that vicinity. The writer was detailed for the duty and arrived at Catlettsburg on the morning of April 4. Upon arrival there the writer, in accordance with official instructions given him, conferred with the local authorities about the sanitary situation in Catlettsburg and communicated with the secretary of the Kentucky State Board of Health his desire to cooperate with the State and local authorities in the enforcement of such measures as might be necessary to prevent the spread of infectious diseases in interstate traffic. He was placed at once practically in charge of the work of sanitation in Catlettsburg and later on was detailed on the request of the State health authorities to visit, for the purpose of making sanitary inspections and of advising with the local authorities about sanitation, other flood-stricken cities and towns in Kentucky, including Maysville, Paducah, Wickliffe, and Columbus. Duty in these several places was continued until April 19.

CATLETTSBURG.

Catlettsburg has a population of about 4,000. The town is located on the left bank of the Big Sandy and the Ohio Rivers above and below the point of their confluence. It is built up mainly on the low river land, which gradually increases in elevation, however, as it extends from the river to a range of high hills, which skirts the west side of the town. While extending along the bank of the river a distance of about a mile and a half, the town averages only about two city blocks in width. At the time of the high water the banks of both the Ohio and the Big Sandy were greatly overflowed, and Catlettsburg was severely flooded. Over 90 per cent of the houses in the town were in water. The rivers began to overflow their banks on March 27. When the flood reached its crest, on March 30, the water was about 15 feet in depth along the water front of the town and about 8 feet in depth in one of the principal streets two blocks away from the river. Many of the houses were severely damaged, some overturned, and some carried away by the flood. Several hundred

persons were rendered homeless. The water began to recede on March 31 and was out of the streets by the morning of April 4. The flood left a heavy deposit of mud in the streets and yards, in many places 5 to 10 inches in depth. Tremendous amounts of débris, consisting of driftwood, trees, lumber, wreckage of houses, etc., were scattered over the town. The municipal authorities and the people generally set to work in good earnest to improve conditions.

When the writer arrived on the morning of April 4, a good force of men with teams and wagons was engaged under the direction of a committee appointed from the city council in cleaning streets, alleys, and yards; a special relief committee was busily engaged, as it had been for several days, in distributing to the needy, foods and clothing which had been supplied in abundance and with highly praiseworthy promptness by the United States War and Navy Dements; two camps in different parts of the town had been established for homeless persons, and the town was thoroughly placarded with warnings to the people to boil drinking water.

Among the first matters to receive the personal attention of the writer were the city water supply, the camps, and the numerous insanitary privies and cesspools in the town. The waterworks are owned and operated by a stock company. The intake for the water supply is in the Big Sandy River at a point upstream from all the outlets of the town sewers, but downstream and only a few hundred yards from the mouth of a surface stream (known as Hampton Branch) which directly or through its tributary branches is grossly contaminated with the contents or drainage from the contents of two or three hundred privies located at homes in the south end of the town or in the immediate vicinity thereof.

This stream, ordinarily carrying a small volume of water, is practically an open sewer. Upon inquiry, the writer was informed by a number of citizens that the public water supply in ordinary times was usually noticeably turbid. The pumping station, it was said, had been incapacitated for only one day by the flood. As the high water receded from the town an unusually heavy draw on the public water supply was occasioned by the great amount of washing of streets and houses which went on. The public water supply as it was being distributed on April 4 was highly turbid. On the afternoon of that date, the writer, accompanied by the superintendent of the plant, made an inspection of the waterworks. At the pumping station, located near the river bank, the water was being treated with a coagulant (lime and sulphate of iron) and then pumped a distance of about a half mile to the sedimentation reservoirs on top of a hill overlooking the town. The reservoirs are of the open type and consist of excavations in the natural soil formation encircling the top of the hill. They are of sufficient extent and capacity to effect, when

properly operated, a reasonably good sedimentation of the water. At the time of this inspection, however, there was practically no storage of water in the reservoirs, the water being run through them as an open stream and carrying with it a large proportion of the mud (and, of course, also the bacteria) which it contained as it left the river. Considering the pollution of the river at the location of the intake, the water supply as it was then being delivered could not have been reasonably regarded as a safe one. The writer suggested (1) an increased clarification of the water by using an additional amount of the coagulant, if necessary, and by securing a good storage of water in the reservoirs, the pumping thereto to be increased and the distribution therefrom, if necessary, to be decreased for a time—so that the water would have time to undergo proper sedimentation; and (2) a continuous treatment of the water, after sedimentation, with hypochlorite of lime.

These suggestions were acted on promptly by the waterworks officials, and within 24 hours the water distributed to the town was practically clear—much clearer, it was said by a number of the citizens, than it usually was in ordinary times—and as it flowed from the main sedimentation reservoir the water was receiving what appeared to be a proper treatment with hypochlorite of lime solution. Under these improvements the public water supply was one which on general principles could be regarded as reasonably safe, and thus it appeared that one big step toward safeguarding the community had been accomplished. The people were warned against using water from possibly contaminated cisterns or shallow wells unless such water prior to use was boiled or treated with hypochlorite solution. Bottles of the hypochlorite solution in large number were prepared and extensively distributed. Many of the people used the hypochlorite solution for the treatment of drinking water in private homes and thus proved the feasibility of this measure. The permanent closing of a number of shallow dug wells exposed obviously to dangerous pollution was recommended to the city council.

One of the encampments was well located and needed only a few improvements to place it in reasonably good sanitary condition. The other encampment, containing about 15 families, was located in proximity to a number of private homes at which the sanitary conditions were bad. At some of these homes there were shallow open wells down hill from and within 20 to 30 feet of grossly insanitary privies which were being severely overtaxed from the additional use of them by the persons in camp.

The sewerage system reaches about 60 per cent of the town's area. In the sewered sections not more than about 50 per cent of the houses have sewer connections. At houses in the nonsewered sections and at those in the sewered sections but not having sewer connections

privies generally were in use. At the time of the flood all or certainly almost all of the hundreds of privies in use in the town were of insanitary type. Some were of the open-back surface variety, some overhung small surface streams or open ravines, and some had deep pits in the ground under the seats. None seen or heard of was fly-proof. The superstructures and some of the contents of many of the privies were carried away by the flood. Upon the recession of the water many accumulations of night soil were left exposed on the surface of the ground or in the pits over which the houses had been. Many insanitary privies in sections which were habitable immediately after the flood were being overtaxed by the extra number of persons using them. As the high water began to recede the public water-carriage sewerage system had resumed its normal operation, and had the whole town been sewered and properly connected with the sewers the sanitary situation in Catlettsburg, after the flood, would have been simple and readily correctible. The conditions associated with the many insanitary privies constituted a serious problem and one difficult of quick and satisfactory solution.

Authority to expend money from the epidemic-disease fund of the United States Public Health Service for the employment of laborers and the purchase of disinfectants for use in Catlettsburg and vicinity with a view to preventing interstate spread of disease was obtained from the Treasury Department in Washington. Under that authority an ample quantity of disinfectants was obtained and a force of laborers was employed and kept at work for a period of 15 days under the direction of the writer. These laborers were divided into three squads and each squad with a wagon and team to carry disinfectants and mixing tubs was assigned to duty in one-third of the town to search out systematically and treat liberally with disinfectant solution every privy and cesspool. The first round of the privies was begun on April 7 and completed on or about April 10. A second round was made about 10 days later. The disinfectant solution used in the privies was one either of chloride of lime or of quicklime, and about 10 gallons of the solution were used in each privy. Besides carrying out this "shotgun" disinfection of privies and cesspools, the Public Health Service laborers assisted in the disinfection of water cisterns and cellars, in the fumigation of some public buildings which had been occupied by refugees, in the preparation and distribution of bottles of hypochlorite solution for use in the treatment of water for drinking at private homes, in the rehabilitation and sanitation of privies, and in other work of a strictly sanitary nature.

On the recommendation of the writer a town health officer was appointed by the city council on April 5. Three Red Cross nurses requisitioned from the National Red Cross Association headquarters in Cincinnati, arrived in Catlettsburg on April 6 and were set to work

seeking out and helping care for the sick, especially for cases suspected to be infectious. These nurses rendered excellent service not only in finding and helping care for the sick, but also in the course of their frequent rounds—practically house-to-house canvasses—of the town in obtaining for the relief committee specific information about the need of foods and clothing among the flood sufferers.

All of the practicing physicians of the town were communicated with directly and their cooperation was requested in respect to the prompt reporting and the carrying out of prophylactic measures about recognized and suspected cases of infectious disease. At a citizens' meeting on April 6 the people were advised about sanitary measures to carry out in their homes. The local newspaper, as soon as its printing machinery had been repaired from damage by the flood, rendered excellent service by giving conspicuous publicity to sanitary matters. A general spirit of cooperation appeared to prevail in the community and the work of sanitation progressed well.

By April 11 Catlettsburg was probably in better condition from a strictly sanitary standpoint than it was before the flood. No evidence of any outbreak of any infectious disease had appeared and the work of sanitation was being continued at a good rate. On April 11, before leaving Catlettsburg for a trip in the western end of the State, the writer, at a meeting with the mayor and city council, submitted the following recommendations:

1. Require a prompt report to the health officer of all suspected and recognized cases of typhold fever and of other infectious diseases.

2. Have rigid precautions exercised, under official supervision, about the bedsides of all cases which could reasonably be suspected to be infectious in nature, and, so far as might be practicable, have all persons sick with typhoid fever or other dangerous communicable disease sent for care and treatment to the hospital in Ashland.

3. Appoint a well-qualified man as assistant health officer, with a salary adequate to justify requiring him to devote all of his working time to health work.

4. Have continued, under necessary official supervision, the clarification and the hypochlorite treatment of the public water supply.

5. Have all shallow dug wells on premises where other and safer sources of water supply might be available permanently closed.

6. Assist with public labor so far as might be necessary the rehabilitation and sanitation of privies, and require all occupied houses to be provided with either properly connected water-closets or reasonably sanitary privies.

7. Have the cleaning of streets, alleys, yards, and houses continued at as rapidly an increasing rate as might be practicable.

8. Have the public water supply protected against pollution from the foul water discharged through Hampton Branch, either by having

the intake of the water system carried up the river to some point above the mouth of Hampton Branch or by having the section drained by this creek sewered and the sewage discharged at points downstream from the present location of the intake for the water supply.

9. Enact and rigidly enforce an ordinance requiring all habitations within the publicly sewered and watered area to be properly connected with the sewerage system.

10. Have the sewerage system extended as rapidly as practicable to cover the whole town.

11. Require all privies in the town to be made fly proof, to be provided either with water-tight receptacles above the surface of the ground or with properly walled excavations below the surface of the ground to receive the excreta, and, under official supervision, to be maintained at all times in good sanitary condition.

12. Have condemned as unfit for human habitation all properties which could not be made reasonably sanitary.

Of these recommendations the first seven were urged as feasible for immediate adoption, and the last five were urged as permanent policies to be adopted and carried out as rapidly as circumstances might permit.

The writer returned to Catlettsburg on the afternoon of April 17. He found that the general work of sanitation during his absence had been progressing at a gratifying rate, but to his surprise and disappointment he learned that the public water supply was again highly turbid and had been so since the day before. On inspection by the writer and the local health officer it was found that the reservoirs had been allowed for some reason to become nearly empty and the water was being run through them without time being given it for proper sedimentation to take place. The operation of the hypochlorite plant had been discontinued, and the public water supply, so far as its mud content and its potential dangers from pollution at the intake were concerned, was in just about the same condition as it was when inspected on April 4. Furthermore, at the time of the inspection on the afternoon of April 17 deposits of human excrement (at least eight in number) were found on or near the banks of two of the storage reservoirs on the hill. Several of these deposits were on the side of the bank sloping toward the reservoirs and at one point less than 6 feet from the water's edge. These necessarily would have been washed into the water supply had heavy showers of rain occurred. It was obviously possible for any of the deposits near the bank or on the slope of the bank distal to the reservoirs to be carried by insects or worms or on the feet of persons or animals to the slope of the bank over the water's edge or actually into the water. The presence of these deposits in the immediate vicinity of the hypochlorite plant denoted a gross care-

lessness on the part of the men who had been operating the plant or on the part of those who were supposed to exercise vigilance to protect the water supply against readily avoidable nuisance.

At the time, however, the presence of these deposits did not suggest anything like as great potentialities of danger as did the contamination of the water supply with the discharge from Hampton Creek, since its mud content indicated that the water as then distributed was not being effectively treated by purification methods after it entered the water system at the intake. Before a meeting of the city council on the night of April 17, the writer reported on the condition of the water supply, stating that, in his opinion, the public water supply as then being distributed was unsafe and recommended (1) the exercise of official supervision over the operations of the public water system and (2) the enactment of an ordinance requiring that the public water supply as distributed to the town should not at any time contain more than one (1) colon bacillus to the 50 cubic centimeters of water—fermentation with gas production in standard lactose bile or lactose bouillon to be accepted as evidence of the presence of the colon bacillus and the examinations of the water samples to be conducted according to the following method:

Plant 10 c. c. of the water in each of 5 fermentation tubes. Incubate the planted tubes at about 37° C. for 48 hours. Accept the production of gas in none or only 1 of the 5 fermentation tubes to mean not more than 1 colon bacillus to the 50 c. c. of water. Accept the production of gas in 2 or more of the 5 fermentation tubes to mean more than 1 colon bacillus to the 50 c. c. of water.

Since that meeting the city council of Catlettsburg has appointed an assistant health officer; has named a full city health board, consisting of five representative citizens, with the health officer as secretary of the board; has passed a drastic ordinance requiring the public water supply at all times to be within a certain bacterial standard of purity; has ordered the local waterworks company to remove the intake of their receiving pipes up the Big Sandy River to a point above the mouth of Hampton Branch, and to build a close-meshed fence at least 5 feet high around the reservoir; has passed an ordinance forbidding trespass on the property of the waterworks company in the vicinity of the reservoirs; and has appointed a committee to investigate and report on the cost and feasibility of extending the local sewerage system, of installing a garbage incinerator, and of providing for improved methods of collecting and disposing of night soil, garbage, and other city refuse.

Since April 17 there have been no outbreaks or unusual prevalence of any infectious disease reported in the town,[1] the general work of

[1] From Apr. 20 to June 7 there have been reported in Catlettsburg and its immediate vicinity only five cases of typhoid fever, and all of these cases developed among persons residing in the Hampton Branch section.

cleaning up has gone on at a good rate, and from present indications Catlettsburg will soon occupy an advanced position in hygienic progress.

MAYSVILLE.

Maysville, with a population of about 10,000, including that of suburban villages, was flooded at the same time as was Catlettsburg. About 65 per cent of the houses in the city were in water. The conditions occasioned in Maysville by the flood were, though proportionately of less extent, strikingly similar in character to those observed in Catlettsburg.

The public water supply for Maysville is obtained from the Ohio River. The intake is downstream and only a few hundred yards from the outlet of one of the main city sewers. The water supply is treated by the use of a coagulant (lime and iron) and mechanically filtered. The waterworks were incapacitated for three or four days during the period of high water, and on those days water from various sources, including springs, wells, and cisterns in the hills, was conveyed by means of boats to homes in the flooded sections. About 60 per cent of the houses in the city are connected with the water-carriage sewerage system, and the others are provided with privies or cesspools, almost all of which are of insanitary type. The area of the city which was flooded was in large part comprised by the non-sewered sections.

Typhoid fever is quite prevalent in Maysville, about 100 cases occurring in the city each year, and several cases were under treatment when the flood occurred. No cases of smallpox had been known to exist in the city for some time prior to the flood, and none was found in the period of the flood. There had been since the beginning of the year about 30 cases of cerebrospinal fever, and several cases were still under treatment at the time of the flood.

Several hundred flood sufferers were domiciled temporarily in large warehouses which were connected with the sewers and were readily kept in reasonably good sanitary condition. The writer arrived at Maysville on the night of April 8 and on the following morning conferred with the members of the city board of health and the county health officer and made with them a sanitary survey of the city and its environs. The work of sanitation under the direction of the city board of health evidently had been carried on energetically. Most of the débris and mud left by the flood had been cleaned away. Quicklime had been sprinkled liberally in yards and alleys. Basements and cellars were being pumped out and disinfected. A liberal supply of antityphoid vaccine had been obtained and the administration of it offered free of charge. The merits of this agent were given for several days conspicuous and

extensive publicity through the local press and in other ways, and the afternoon of April 9 was designated as the time on which the extensive plan for the inoculation of the people was to be put into operation. On that afternoon a number of stations for administering the prophylactic were opened at school buildings and other public places in different parts of the city, so as to be convenient to the whole population. To assist the health department officials in the operation of these stations the services of a number of the practicing physicians in the city had been obtained. At the appointed time on the afternoon of April 9 the physicians with their assistants and equipments were at the different stations ready to do business, but no one appeared at any of the stations to receive the inoculation. Thereupon the maintenance of the public stations for antityphoid inoculations was discontinued, and in the several days following not more than 5 or 6 persons applied for and received the inoculations.

After completing his sanitary survey of the city on April 9 the writer, at the request of the city health department, made before a meeting of the city council and board of health of Maysville a formal report embodying the following recommendations:

1. Treatment of the city water supply with hypochlorite of lime (containing 30 per cent of available chlorine) 10 pounds of this chemical to be used in each million gallons of water.

2. The distribution of hypochlorite solution for use in the treatment of drinking water in homes.

3. Treatment of every privy and cesspool in the city with a solution of quicklime—10 pounds of the lime in 10 gallons of water to be used in each privy or cesspool.

4. Obtainment of four Red Cross nurses to help find and care for the sick, especially cases of infectious disease.

5. The enactment and rigid enforcement of an ordinance requiring every house in the sewered area to be properly connected with the sewerage system within the earliest time reasonable—60 days being suggested.

6. The extension of the sewerage system as rapidly as practicable to cover the whole city.

The council at once by resolution adopted these recommendations, and the mayor appointed a committee, composed of one councilman from each of the six wards of the city, to cooperate with the city board of health to see that the recommendations were carried out. Said committee was empowered to employ all necessary equipment for carrying out the recommendations. The writer returned to Catlettsburg on April 10.

PADUCAH.

The writer arrived at Paducah on the evening of April 12, and by previous arrangement with the secretary of the State board of health was met there by Dr. W. W. Richmond, a member of the board and serving as one of the field inspectors.

A conference was held that evening with the local health authorities, and on the following morning the writer and Dr. Richmond, accompanied by the president of the city board of health (who is also an acting assistant surgeon of the Public Health Service and in charge of service operations for the port of Paducah), the city health officer, and the county health officer, made a sanitary survey of the city and its environs.

Paducah has a population of about 25,000. When the flood was at its crest about one-third of the houses in the city were in water. By April 13 the water had receded from the streets in about one-half of the area which had been covered by the high water. The public water supply, obtained from the Ohio River and treated by coagulation, storage, and mechanical filtration, was quite generally distributed over the city. There were few, if any, wells or cisterns in the flooded sections. The equipment for the purification of the public water supply appeared to be adequate and the management of the waterworks appeared to be efficient, but as an extraordinary precaution the writer advised the treatment of the water with hypochlorite of lime. The water company immediately took steps to carry out this suggestion.

At the time of the high water there was some interference with the discharge from the city sewers and sewage backed up into a considerable proportion of the basements and cellars, but the interference with the sewers was relieved as the flood water began to recede from the city. A considerable proportion of the flooded area was nonsewered and contained numerous insanitary privies.

There are in the whole city about 3,000 privies, almost all of which were found to be insanitary privies of the surface, open-back type. In many sections of the city there were found on either side of long alleys, lines of these insanitary privies with their open backs abutting on the alleys and with their filthy contents thoroughly exposed to flies and overflowing into the alleys to be washed about by rains and disseminated over the town by wagon wheels and the feet of persons and animals. In view of the situation in respect to insanitary privies it is not surprising that the typhoid rate in the community has been high. The typhoid death rate for Paducah in 1912, a comparatively low-rate year for that general section of the country, was about 50 per 100,000 population.

From the very beginning of the flood period the local health authorities with highly commendable vigor and intelligence had had enforced sanitary measures. About 1,150 flood sufferers were taken care of in an encampment well located in a field near the edge of the city. Frame buildings, hastily but well constructed, were used for housing the persons in the encampment. The camp was supplied with city water and sewerage by means of pipes laid on the surface of the ground and extended out from connections with the city systems. The encampment was kept well policed and apparently in good general sanitary condition.

In removing persons from flooded homes to the encampment some cases of smallpox—previously not known about by the authorities—were discovered. Prompt measures to prevent the spread of the infection were carried out. Cases of the disease and their immediate associates were isolated. All persons in the camp who could not show evidence of recent successful vaccination were vaccinated. A general vaccination of school children and of employees in the city was rapidly carried out and all persons not certain of being immunized against smallpox were advised to get vaccinated. Thousands of persons were vaccinated and all presumably infected houses were fumigated. The outbreak comprising some 25 or 30 cases was quickly controlled.

In the flooded sections the usual sprinkling of lime in yards and alleys was done, basements, cellars, and flooded portions of houses were cleaned and disinfected with chloride of lime solution, and the homes before reoccupance had to be placed in good sanitary condition, especially in respect to proper arrangements for excreta disposal, and so certified by one of the inspectors from the health office. A liberal supply of antityphoid vaccine had been obtained and its extensive administration advised, but with results only a little better than were obtained from similar efforts to get this agent administered in Maysville (referred to above).

The local authorities had left little to be suggested in the way of additional sanitary measures feasible for the flooded sections of Paducah.

WYCKLIFF.

The writer, accompanied by Dr. Richmond, arrived at Wyckliff on the morning of April 14. After conference with the town health officer, the county health officer, and the mayor a sanitary inspection of the town was made. The greater part of Wyckliff is on well elevated ground overlooking the Mississippi River, and only about 10 per cent of the town's area was flooded. The flood along this part of the river's course began about March 28, reached its crest on April 9, and the water was just beginning to recede on April 14.

The population of Wyckliff in usual times is about 1,000, but in the latter part of March as the waters of the Mississippi began to rise a large number of refugees from the flooded sections on either side of the river came to Wyckliff, and the population of the town and its immediate environs within the course of a few days, ending March 30, was about quadrupled. Of the 3,000 refugees in the town about 2,600 were domiciled in private homes or public buildings, including the county courthouse, and about 400 in tents. On April 14 there were still about 600 refugees in the town, of whom about 100 were in the tented encampment. The presence of such a large number of persons in the town, though fortunately for only a short period, had resulted in a marked accentuation of the usual insanitary conditions.

A few private wells and cisterns are in use, but nearly all of the water used in the town is from the public supply. The public supply is obtained from a bored well, 137 feet in depth, located on the lower edge of the town toward the river. The 6-inch iron pipe of the well is said to pass through a deep stratum of potter's clay, which is regarded as being impervious to water. The water from this well is said to be at all times abundant for the needs of the town. The water is clear, free from objectionable taste or odor. It is probably a safe supply, but on account of the extensive pollution of the surface soil uphill from and in the neighborhood of the well the sending of samples of the water periodically to the State laboratory for bacteriological examination was advised.

The town has no public sewerage system. A few of the houses have water-closets connected with small private sewers, which discharge over the sides of the hills or into small surface streams in the town. Most all of the homes are provided with insanitary privies—generally of the open-back surface type—and most of these privies were severely overtaxed by the extra use of them by refugees during the flood period. The writer, in a somewhat extensive experience in the making of sanitary surveys in different parts of the United States, has visited no community in which the conditions in respect to insanitary privies were worse than they were found in Wyckliffe, nor in which there appeared to be on the part of the municipal authorities less apprehension about the potential dangers inevitably associated with such conditions. No satisfactory records were obtainable, but it is the safest kind of a guess that Wyckliffe's rate from typhoid fever and other diseases caused by excreta-borne infections is high summer after summer.

At the time of the inspection one case strongly suggestive of typhoid fever existed among the refugees, and no adequate precautionary measures were being carried out at the bedside of this case to prevent the spread of probable infection. The encampment was

found to be poorly policed. The privies in the encampment, consisting of one pit privy and one surface privy, were inadequate and filthy. Privies, also grossly insanitary, at homes in the neighborhood were being used to a considerable extent by persons from the camp.

Upon completing the sanitary inspection the writer made to the mayor and to a number of the local business men, assembled on the invitation of the county judge, a report embodying recommendations especially for (1) the exercise of proper precautions about the persons of suspected cases of infectious disease; (2) the sanitation of existing privies; (3) the reconstruction on sanitary principles and the proper maintenance of privies throughout the town; and (4) the installation, ultimately and as soon as practicable, of a complete water-carriage sewerage system.

COLUMBUS.

Columbus was visited by Dr. Richmond and the writer on April 15. This town, with a population of about 1,000, was severely flooded. The water in some parts of the town was over 15 feet in depth, and of all the houses within the incorporated limits of the town only six remained out of water.

The water came up gradually, however, and Columbus, unlike the torrent-swept towns on the Ohio River, suffered very little damage from the overturning and washing away of houses. On April 15 the water was still high, having receded to the extent of only 1 foot from the height reached when the flood was at its crest. The majority of the townspeople remained in their homes throughout the period of the flood, living on the upper floors of their houses. Street traffic was done entirely by means of boats. About 400 persons temporarily abandoned their homes and went to stay with neighbors in the surrounding country or went into the tented encampment established on the outer margin of the town on the slope of a hill. The greatest number of persons domiciled in the encampment at any one time was about 250. Columbus has no public water supply nor sewerage system. Water is obtained from wells—mostly driven wells—and cisterns. Many of the wells and cisterns were rendered inaccessible by the high water, and water for drinking and culinary purposes was obtained from wells and cisterns at homes in the surrounding country and distributed to the townspeople.

Most of the privies in the towns were, on account of the high water, inaccessible for inspection, but were said to be generally of the insanitary surface or unscreened box type.

The camp was found to be well policed and, except for some faulty privies, in good general condition. The county health officer, who was a member of the relief committee and who was looking after

sanitary conditions, had kept a close supervision over the sick and reported that during the flood period no cases or suspected cases of typhoid fever or of other infectious diseases had developed.

Upon completion of the inspection a conference was held with the members of the relief committee, and such recommendations as appeared pertinent to the situation were made. Among the measures especially advised for immediate application were (1) sanitation and improvement of construction of the privies being used in the encampment and at homes—out of water—in the neighborhood thereof, and (2) the preparation and distribution of bottles of hypochlorite solution for the treatment of drinking water. The necessary steps to carry out these suggestions were taken at once by the committee. The members of the relief committee furthermore expressed their intention to carry out, so far as might be practicable, as the water receded from the town, the other measures advised consisting of those which are generally applicable for the sanitation of flood-stricken towns. As funds were not locally available for the purchase of disinfectants needed, the Public Health Service furnished, on the recommendation of the writer, a carload of quicklime for use in the sanitation of Columbus. After conference with the relief committee a public meeting attended by about 200 of the citizens was addressed on the subject of the local sanitary situation. At this meeting the adoption of permanently effective sanitary measures, such as the securing of a good public water supply and the installation and maintenance of sanitary privies or of a water-carriage sewerage system, was urged.

The writer, throughout the course of this work in flood-stricken towns and cities, received and was materially assisted by the cordial and hearty cooperation of the State and local health officials with whom he was associated. So far as he has been able to ascertain there have been, since the flood, no outbreaks of infectious disease in, nor any unusual spread of infection in the course of interstate traffic from, any of the flood-stricken towns or cities in Kentucky.

Conclusions.

1. Floods such as occurred in the Ohio and Mississippi Valleys in the spring of 1913 occasion sanitary situations of considerable gravity.

2. The insanitary conditions obtaining in most flood-stricken towns and cities represent in large part merely an accentuation of conditions which were faulty and dangerous before the period of flooding.

3. Insanitary conditions occasioned by floods in towns or cities which immediately prior to being flooded have had good and complete public water supplies and water-carriage sewerage systems are, as a rule, readily correctible.

4. The installation and maintenance of sanitary devices for the proper disposal of human excreta is, as a rule, the most important single measure needed for safeguarding the health of flood-stricken communities.

5. The treatment of water supplies with hypochlorite of lime is a thoroughly feasible measure, which has a wide range of applicability in flood-stricken towns and cities.

6. Antityphoid inoculation, though capable of affording a very considerable degree of protection against typhoid infection, does not appear in its present stage of exploitation to be a measure practicable for extensive application in flood-stricken communities.

7. The work of sanitation precipitated by flood conditions may be, and should be, directed to effect permanent sanitary improvements.

Fig. 1.—BIRD'S EYE VIEW OF CENTRAL SECTION OF CATLETTSBURG, KY., WHEN FLOOD WAS AT ITS HEIGHT.

Fig. 2.—VIEW OF EAST SECOND STREET, MAYSVILLE, KY., WHEN THE FLOOD WAS AT ITS CREST.

Fig. 3.—CONDITIONS IN FLOOD-SWEPT SECTION OF MAYSVILLE, KY.

Fig. 4.--DÉBRIS LEFT IN STREETS BY THE FLOOD. SCENE ON FRONT STREET IN CATLETTSBURG, KY.

PREVALENCE OF DISEASE.

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.

IN CERTAIN STATES AND CITIES.

SMALLPOX.

Alaska—Uyak.

A telegraphic report received through the Revenue-Cutter Service, Washington, D. C., June 5, 1913, stated that smallpox had been reported present at Uyak, Kodiak Island, Alaska.

California—Alameda and San Francisco.

Surg. Long, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 1 case of smallpox had been notified in Alameda and 1 case in San Francisco, Cal.

California—Imperial County.

Acting Asst. Surg. Richter, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 3 cases of smallpox had been notified in Imperial County, Cal.

California—Los Angeles.

Senior Surg. Brooks, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 3 cases of smallpox had been notified in Los Angeles, Cal., making a total of 46 cases reported since January 1, 1913.

Indiana—Evansville.

Surg. Clark, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 9 cases of smallpox had been notified in Evansville, Ind., making a total of 809 cases reported since October 1, 1912.

Maryland—Anne Arundel County.

The State Board of Health of Maryland reported by telegraph June 11, 1913, that 8 cases of smallpox had been notified in the Crownsville State Hospital, Anne Arundel County, Md.

Oregon—Portland.

Surg. Magruder, of the Public Health Service, reported that during the month of May, 1913, 26 cases of smallpox had been notified in Portland, Oreg.

Miscellaneous State Reports.

Places.	Cases.	Deaths.
Colorado (May 1-31):		
Counties—		
Arapahoe	1	
Denver	5	
Las Animas	9	
Logan	1	
Phillips	2	
Weld	14	
Total	32	
Pennsylvania (Mar. 1-31):		1
Texas (Apr. 1-30):		
Counties—		
Archer	10	
Childress	2	
Dallam	12	
Dallas	70	
Denton	2	
Texas (Apr. 1-30)—Continued.		
Counties—Continued.		
Ellis	1	
Foard	32	
Gonzales	1	
Hall	2	
Hill	10	
Hunt	1	
McLennan	9	
McMullen	6	
Navarro	1	
Palo Pinto	5	
Parker	4	
Rockwell	1	
Tarrant	41	
Van Zandt	2	1
Waller	2	
Williamson	3	
Total	217	1

City Reports for Week Ended May 24, 1913.

Places.	Cases.	Deaths.
Ann Arbor, Mich	2	
Cambridge, Ohio	1	
Columbus, Ohio	1	
Danville, Ill	1	
Duluth, Minn	6	
Evansville, Ind	23	
Kalamazoo, Mich	1	
Knoxville, Tenn	6	
Lexington, Ky	6	
Los Angeles, Cal	3	
Manchester, N. H	1	
Marinette, Wis	1	
Milwaukee, Wis	7	
Nashville, Tenn	5	
New Orleans, La	1	
Peoria, Ill	2	
Pittsburgh, Pa	1	
Portsmouth, Va	2	
Richmond, Va	1	
San Diego, Cal	2	
San Francisco, Cal	2	
Springfield, Ohio	1	
Superior, Wis	7	
Toledo, Ohio	2	
Washington, D. C	13	
Wheeling, W. Va	1	
Wilmington, N. C	1	

CEREBROSPINAL MENINGITIS.

Places.	Number of new cases reported during month.	Places.	Number of new cases reported during month.
Texas:		Texas—Continued.	
Galveston County—		Travis County—	
Galveston	1	Austin	1
McLennan County	2		
Rockwall County	3	Total	7

California—Los Angeles.

Senior Surg. Brooks, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 3 cases of cerebrospinal meningitis had been notified in Los Angeles, Cal.

Missouri—Deaths in 1911 and 1912.

Surg. Carrington, of the Public Health Service, reported May 30, 1913, that during the years 1911 and 1912, 72 and 486 deaths, respectively, from cerebrospinal meningitis had been reported in the State of Missouri.

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Chicago, Ill		2	Los Angeles, Cal	3	2
Cincinnati, Ohio	2	3	Lowell, Mass		1
Cleveland, Ohio	2	2	Malden, Mass		1
Dayton, Ohio		2	Milwaukee, Wis	1	1
Evansville, Ind	1	1	New York, N. Y	7	2
Jersey City, N. J		1	Philadelphia, Pa	1	1
Hartford, Conn		1	Pittsfield, Mass		1
Haverhill, Mass	1		Saginaw, Mich		1
Houston, Tex	1		St. Louis, Mo		1
Knoxville, Tenn	1		San Francisco, Cal	1	1
La Crosse, Wis		1			

POLIOMYELITIS (INFANTILE PARALYSIS).

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Boston, Mass	1		New York, N. Y	5	
Elizabeth, N. J	1		Philadelphia, Pa	1	
Newark, N. J	1	1	Saratoga Springs, N. Y	1	
New Bedford, Mass	1				

ERYSIPELAS.

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Binghamton, N. Y.	1		Muscatine, Iowa	2	1
Chicago, Ill.	6		New York, N. Y.		8
Cincinnati, Ohio	5		Passaic, N. J.	1	
Cleveland, Ohio	9	2	Philadelphia, Pa.	13	2
Johnstown, Pa	1		St. Louis, Mo.	11	1
Los Angeles, Cal.	4		San Francisco, Cal.	3	1
Malden, Mass.		1	Wheeling, W. Va.	1	
Milwaukee, Wis.	3				

LEPROSY.

Texas—Corpus Christi.

The State Board of Health of Texas reported that during the month of April, 1913, 1 case of leprosy had been notified at Corpus Christi, Tex., and that the case had gone to Beeville, Bee County, Tex.

PLAGUE.

Rats Collected and Examined.

Places.	Week ended—	Found dead.	Total collected.	Examined.	Found infected.
California:					
Cities—					
Berkeley	May 24, 1913	4	201	143	
Oakland	do	29	643	462	
San Francisco	do	20	1,873	1,238	
Washington:					
City—					
Seattle	do		754	710	

California—Plague-Infected Squirrels Found.

During the week ended May 24, 1913, there were examined for plague infection 1,735 ground squirrels from Contra Costa County. Of this number 13 were found plague infected. The infected squirrels were found in three localities.

PNEUMONIA.

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Binghamton, N. Y.	4	2	Philadelphia, Pa.	23	38
Braddock, Pa.	3		Pittsburgh, Pa.	37	41
Chicago, Ill.	104	98	Reading, Pa.	3	3
Cleveland, Ohio	32	17	Sacramento, Cal.	1	1
Erie, Pa.	2		San Diego, Cal.	1	1
Harrisburg, Pa.	2	2	San Francisco, Cal.	8	
Kalamazoo, Mich.	2		Saratoga Springs, N.Y.	1	1
Lancaster, Pa.	1		Schenectady, N. Y.	3	1
Lawrence, Mass.	2	2	South Bethlehem, Pa.	3	1
Mount Vernon, N. Y.	2		Taunton, Mass.	1	1
Muscatine, Iowa	1	1	Trenton, N. J.	2	
New Castle, Pa.	2		Wilmington, N. C.	1	
Newport, Ky.	1	1			

RABIES.

New Jersey—Newark.

The health officer at Newark reported the occurrence of a fatal case of rabies during the week ended May 24, 1913.

TETANUS.

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Places.	Cases.	Deaths.	Places.	Cases.	Deaths.
Chicago, Ill.	.....	1	Pittsburgh, Pa.	1	1
Newark, N. J.	1	1	Sacramento, Cal.	.....	1
Philadelphia, Pa.	1	.....	St. Louis, Mo.	2	2

SCARLET FEVER, MEASLES, DIPHTHERIA, AND TUBERCULOSIS.

Edgartown, Mass.—Diphtheria.

Acting Asst. Surg. Worth of the Public Health Service, reported by telegraph June 5, 1913, that 12 cases of diphtheria had been notified at Edgartown, Mass.

Evansville, Ind.—Scarlet Fever, Measles, and Diphtheria.

Surg. Clark, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 7 cases of scarlet fever, 13 cases of measles, and 1 case of diphtheria had been notified in Evansville, Ind., making totals of 437 cases of scarlet fever reported since October 1, 1912, 111 cases of measles reported since January 1, 1913, and 315 cases of diphtheria reported since August 1, 1912.

Los Angeles, Cal.—Measles.

Senior Surg. Brooks, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 401 cases of measles had been notified in Los Angeles, Cal., making a total of 5,808 cases reported since January 1, 1913.

Pittsburgh, Pa.—Measles.

Surg. Stoner, of the Public Health Service, reported by telegraph that during the week ended June 7, 1913, 75 cases of measles, with 3 deaths, had been notified in Pittsburgh, Pa., making a total of 9,348 cases, with 159 deaths, since the beginning of the outbreak November 1, 1912.

Portland, Oreg.—Scarlet Fever, Measles, and Diphtheria.

Surg. Magruder, of the Public Health Service, reported that during the month of May, 1913, 47 cases of scarlet fever, 179 cases of measles, and 7 cases of diphtheria had been notified in Portland, Oreg.

Cases and Deaths Reported by Cities for Week Ended May 24, 1913.

Cities.	Population United States census, 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Over 500,000 inhabitants:										
Baltimore, Md	558,485	181	14	.....	180	4	33	2	41	17
Boston, Mass	670,585	236	52	5	163	3	31	1	63	30
Chicago, Ill	2,185,283	644	161	19	394	10	273	14	295	63
Cleveland, Ohio	560,663	180	47	2	200	4	28	1	34	18
New York, N. Y	4,766,883	1,572	350	31	1,480	18	292	25	477	198
Philadelphia, Pa	1,549,008	467	38	7	321	3	90	2	98	57
Pittsburgh, Pa	533,905	186	18	2	129	7	57	3	32	18
St. Louis, Mo	687,029	217	41	2	104	.....	25	.....	33	17
From 300,000 to 500,000 inhabitants:										
Buffalo, N. Y	423,715	142	18	1	90	2	10	.....	15	19
Cincinnati, Ohio	364,463	141	9	.....	9	1	5	.....	42	22
Los Angeles, Cal	319,198	117	5	.....	445	1	5	.....	19	19
Milwaukee, Wis	373,857	125	25	6	44	2	18	1	39	14
Newark, N. J	347,469	90	16	.....	88	.....	21	.....	40	10
New Orleans, La	339,075	109	10	.....	126	2	1	.....	29	20
San Francisco, Cal	416,912	115	3	.....	21	.....	8	.....	13	12
Washington, D. C	331,069	118	16	1	54	.....	17	1	19	16
From 200,000 to 300,000 inhabitants:										
Jersey City, N. J	267,779	95	18	3	66	1	17	.....	30	12
Providence, R. I	224,326	64	9	1	20	.....	18	.....	11	8
Seattle, Wash	237,194	41	.....	.....	.....	.....	.....	.....	.....	6
From 100,000 to 200,000 inhabitants:										
Bridgeport, Conn	102,054	27	3	.....	.....	.....	9	.....	3	1
Cambridge, Mass	104,839	21	.....	.....	.....	1	.....	.....	.....	3
Columbus, Ohio	181,548	51	3	1	16	.....	2	.....	9	7
Dayton, Ohio	116,577	28	7	.....	6	.....	1	.....	.....	2
Fall River, Mass	119,295	.....	6	4	60	9	22	.....	6	3
Grand Rapids, Mich	112,571	31	6	.....	21	.....	4	.....	3	3
Lowell, Mass	106,294	26	14	1	10	1	3	.....	3	2
Nashville, Tenn	110,364	41	1	.....	6	.....	.....	.....	7	11
Oakland, Cal	150,174	49	6	1	.....	.....	.....	.....	4	3
Richmond, Va	127,628	39	.....	.....	16	.....	2	.....	8	3
Toledo, Ohio	168,497	55	6	1	84	2	2	.....	3	5
Worcester, Mass	145,986	43	6	1	30	1	6	.....	7	6
From 50,000 to 100,000 inhabitants:										
Altoona, Pa	52,127	14	5	2	.....	.....	2	1	.....	2
Bayonne, N. J	55,545	.....	2	.....	2	.....	6	.....	3	.....
Brockton, Mass	56,878	12	.....	.....	15	1	2	.....	4	3
Camden, N. J	94,538	.....	14	.....	11	.....	7	.....	9	.....
Duluth, Minn	78,466	27	2	.....	46	.....	9	.....	.....	3
Elizabeth, N. J	73,409	16	5	.....	21	1	3	.....	7	1
Erie, Pa	66,525	26	.....	.....	57	.....	5	.....	3	.....
Evansville, Ind	69,647	20	.....	.....	11	.....	16	1	.....	2
Fort Wayne, Ind	63,933	12	5	.....	14	.....	1	.....	.....	.....
Harrisburg, Pa	64,186	.....	.....	.....	19	.....	.....	.....	2	1
Hartford, Conn	98,915	.....	11	4	30	1	5	.....	1	.....
Hoboken, N. J	70,324	.....	3	.....	6	.....	6	.....	5	.....
Houston, Tex	78,800	30	.....	.....	.....	.....	2	.....	.....	3
Johnstown, Pa	55,482	25	10	1	41	1	2	.....	.....	.....
Kansas City, Kans	82,331	.....	.....	.....	9	.....	2	.....	4	.....
Lawrence, Mass	85,892	.....	.....	.....	11	.....	2	.....	5	2
Lynn, Mass	89,336	24	2	1	34	.....	5	.....	4	3
Manchester, N. H	70,063	20	3	.....	6	.....	.....	.....	3	3
New Bedford, Mass	96,652	33	.....	.....	41	1	8	.....	9	3
Passaic, N. J	54,773	14	2	.....	6	.....	4	.....	1	3
Pawtucket, R. I	51,622	.....	.....	.....	.....	1	.....	.....	.....	2
Peoria, Ill	66,950	24	3	1	.....	.....	6	1	.....	3
Reading, Pa	96,071	29	4	.....	20	.....	4	.....	1	1
Saginaw, Mich	50,510	17	.....	.....	4	.....	3	.....	.....	.....
St. Joseph, Mo	77,403	22	1	.....	75	1	3	.....	.....	1
Schenectady, N. Y	72,826	24	1	.....	23	.....	10	5	3	1
South Bend, Ind	53,684	13	.....	.....	6	.....	1	.....	.....	1
Springfield, Ill	51,678	13	1	.....	2	.....	.....	.....	.....	1
Trenton, N. J	96,815	32	7	.....	17	.....	8	.....	9	2
Wilkes-Barre, Pa	67,105	21	2	.....	9	1	11	.....	4	2
Yonkers, N. Y	79,803	22	11	1	11	.....	4	.....	7	4

Cases and Deaths Reported by Cities for Week Ended May 24, 1913—Contd.

Cities.	Population United States census, 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
From 25,000 to 50,000 inhabitants:										
Atlantic City, N. J.	46,150		1		41		2		1	
Auburn, N. Y.	34,668	11			4		3	1	2	
Aurora, Ill.	29,807	8	2				1			
Austin, Tex.	29,860		1				5			3
Binghamton, N. Y.	48,443	27	1		3		2			2
Brookline, Mass.	27,792	4	2		9		4		1	
Chelsea, Mass.	32,452	11	1		18				3	
Chicopee, Mass.	25,401	4								
Danville, Ill.	27,871	8			6		1			1
East Orange, N. J.	34,371		2		16		1		1	
Elmira, N. Y.	37,176	13	3		8		2		2	
Everett, Mass.	33,484	8			17		1		2	
Fitchburg, Mass.	37,826	7	1		14		1		1	1
Haverhill, Mass.	44,115		1		3		2		5	2
Kalamazoo, Mich.	39,437	13			4				4	2
Knoxville, Tenn.	36,346	15			7					2
La Crosse, Wis.	30,417	5	1				1			1
Lancaster, Pa.	47,227		3		3		2		2	
Lexington, Ky.	35,099	11	1		9					1
Lynchburg, Va.	29,494	16			15				1	1
Malden, Mass.	44,404	10	1	1	20		3		3	
Mount Vernon, N. Y.	30,919				24		1			
Newcastle, Pa.	36,280				18					
Newport, Ky.	30,309	12	1						1	1
Newton, Mass.	39,806	7	1		16					
Niagara Falls, N. Y.	30,445	10			7		10	1		
Norristown, Pa.	27,875	7	2		1					1
Orange, N. J.	29,630	13	4		5				1	2
Pasadena, Cal.	30,291	12			3		1		1	3
Pittsfield, Mass.	32,121	11			34		11		3	
Portsmouth, Va.	33,190	8			19					
Racine, Wis.	38,002	6	4	1	21		2			
Rockford, Ill.	45,401	16	3				7			
Sacramento, Cal.	44,696	31			4		1			5
San Diego, Cal.	39,578	6			2	1			3	3
South Omaha, Nebr.	26,259	5								
Springfield, Ohio.	46,921		2		5					
Superior, Wis.	40,384	14					1			1
Taunton, Mass.	34,259	9	1						2	1
Waltham, Mass.	27,834	9	3	1	5		2			1
West Hoboken, N. J.	35,403				9		4		5	
Wheeling, W. Va.	41,641	12	3		9					
Williamsport, Pa.	31,860	11	2		3					
Wilmington, N. C.	25,748	7			3				1	2
York, Pa.	44,750						8		2	
Zanesville, Ohio.	28,026	4	1				4			1
Less than 25,000 inhabitants:										
Alameda, Cal.	23,833	2			1				2	1
Ann Arbor, Mich.	14,817	11			17		1		6	
Beaver Falls, Pa.	12,191	0			3					
Bennington, Vt.	21,705	4	1		2					
Biddeford, Me.	17,079	10								1
Braddock, Pa.	17,759		2		4		3			
Cambridge, Ohio.	17,327	2			10					
Clinton, Mass.	13,075	0	1							
Columbus, Ind.	6,719	2			20				1	1
Concord, N. H.	21,427	9			9		1			
Cumberland, Md.	21,839	6	2		8				2	1
Dunkirk, N. Y.	11,616	3			3					
Fountain, Colo.	150	0			2					
Franklin, N. H.	6,132	2			3					
Galesburg, Ill.	22,089	1					1			
Harrison, N. J.	14,489	1			1					
Homestead, Pa.	18,713	13			5		2			1
Kearney, N. J.	18,659	5	1		5		2			
Kokomo, Ind.	8,261	8			26	2				1
La Fayette, Ind.	20,081	11	1		1					1
Marinette, Wis.	14,610	3								1
Marlboro, Mass.	13,606				21				1	1
Massillon, Ohio.	23,830	4								1
Medford, Mass.	23,150	7	1		6				2	

Cases and Deaths Reported by Cities for Week Ended May 24, 1913—Contd.

Cities.	Population United States census, 1910.	Total deaths from all causes.	Diphtheria.		Measles.		Scarlet fever.		Tuberculosis.	
			Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Less than 25,000 inhabitants—Continued.										
Melrose, Mass	15,715	3	1	.....	2	.....	.....	.....	2	.....
Moline, Ill	24,190	.....	1	.....	3	.....	.....	.....	.....	2
Montclair, N. J	21,450	9	.....	.....	1	.....	1	.....	2	2
Morristown, N. J	12,507	5	.....	.....	2	.....	2	.....	1	2
Muscatine, Iowa	16,000	6	.....	.....	24	.....	.....	.....	.....	.....
Nanticoke, Pa	18,857	4	3	.....	2	.....	5	.....	.....	1
Newburyport, Mass	19,240	2	.....	.....	8	.....	.....	.....	1	.....
North Adams, Mass	22,019	3	.....	.....	1	.....	.....	.....	1	.....
Northampton, Mass	23,310	6	.....	.....	1	.....	8	.....	2	.....
Palmer, Mass	7,801	1	.....	1	.....	.....	.....	.....	.....	.....
Plainfield, N. J	23,550	4	2	.....	2	.....	.....	.....	.....	1
Rutland, Vt	6,719	0	1	.....	.....	.....	1	.....	.....	.....
Saratoga Springs, N. Y	13,534	4	.....	.....	8	.....	.....	.....	.....	1
South Bethlehem, Pa	13,241	3	1	.....	6	.....	.....	.....	1	.....
Steelton, Pa	14,479	3	.....	.....	1	.....	.....	.....	.....	.....
Wilkinsburg, Pa	18,594	5	1	.....	2	.....	4	.....	3	1

IN INSULAR POSSESSIONS.

HAWAII.

Examination of Rodents.

Rats and mongoose have been examined in Hawaii as follows: Honolulu, week ended May 17, 1913, 379; Hilo, week ended May 10, 1913, 1,167, and week ended May 17, 1913, 1,075; Honokaa, week ended May 10, 1913, 1,598, and week ended May 17, 1913, 1,152. No plague infection was found.

PHILIPPINE ISLANDS.

Manila—Plague.

Surg. Heiser, chief quarantine officer and director of health for the Philippine Islands, reports: During the week ended April 26, 1913, there was notified at Manila 1 case of plague with 1 death.

PORTO RICO.

Rodents Collected and Examined.

Passed Asst. Surg. Creel reports that during the week ended May 24, 1913, there were examined 1,416 rodents, collected from various points in Porto Rico, and that of these, 475 were collected from various parts of San Juan municipality. None was found infected with plague.[1]

[1] Reports of rodents collected and examined for week ended May 10, 1913, published in Public Health Reports for June 6, 1913, should have been given for the week ended May 17, 1913.

FOREIGN REPORTS.

CHINA.

Hongkong—Plague—Plague-Infected Rats.

Surg. Brown reports: Plague has been reported in Hongkong as follows: Week ended April 19, 1913, 3 cases, with 3 deaths; week ended April 26, 1913, 10 cases with 9 deaths.

Rats have been collected and examined for plague infection as follows: Week ended April 9, 2,235, with 10 rats found plague infected; week ended April 26, 2,155, with 12 rats found plague infected.

On June 9 Consul General Anderson, at Hongkong, reported by telegraph the occurrence of 22 cases of plague.

Quarantine Against Hongkong.

Quarantine has been declared against Hongkong as follows: April 4, 1913, at Singapore on account of plague; April 18, 1913, at Orissa, Burmah, and Chittagong on account of plague.

Swatow—Plague in City and Vicinity.

Consul Williams reports: Bubonic plague is endemic in this district, the center of infection appearing to be Chaoyang city, distant from Swatow about 10 miles. Plague usually makes its appearance in Chaoyang in the spring, but varies considerably from year to year in intensity. Two years ago there was a bad year; last year the epidemic was mild, while this year again the indications are that it will be severe.

A considerable number of inoculations for plague have been made in Chaoyang district. While no complete statistics as to the frequency of attack amongst those inoculated or the percentage of mortality amongst those of the inoculated attacked are available, from general information it appears that but few of those who have been inoculated have subsequently been attacked, and of those who have been attacked and contracted the disease very few have succumbed. Thus, in some instances of children occupying the same bed, those who have not been inoculated have contracted plague and died, while those inoculated have either not contracted it or have recovered.

Plague is prevalent in Chaoyang, Puning, Kityang, Hop'ing, and Fungshun. In Chaoyang dead rats and mice are found in the streets, in sufficient numbers to indicate an unusual mortality among rats. Plague is reported prevalent at Kityang. The Chinese press reports the occurrence of 10 cases of plague at Fungshun.

No cases have been reported in this port itself. This is in line with the experience of past years, for no matter how severe the plague in the country, Swatow has generally escaped, due doubtless to the fact that the city of Swatow is separated from the plague-infected districts by the wide harbor. The chief danger lies in the unrestricted passenger traffic between Chaoyang and Kityang and Swatow.

On account of the heavy emigration of coolies from the interior of Kwangtung Province to southern ports, Singapore and the Dutch Indies have declared quarantine against Swatow.

On April 20 Consul Williams reported the occurrence of two cases of plague in Swatow. Both cases were in refugees from the interior.

CUBA

Habana—Transmissible Diseases.

MAY 11-20, 1913.

Diseases.	New cases.	Deaths.	Remaining under treatment.
Leprosy	1	1	244
Malaria	1	.....	.....
Typhoid fever	7	3	30
Diphtheria	20	2	13
Scarlet fever	44	.....	56
Measles	44	8	58
Varicella	48	.....	6
Paratyphoid fever	12	.....	13

Diphtheria, measles, scarlet fever, and varicella were reported May 29, 1913, to be increasing in Habana.

ECUADOR.

Plague—Yellow Fever.

During the month of April, 1913, plague and yellow fever were notified in Ecuador as follows:

PLAGUE.

	Previously reported.	New cases.	Recovered.	Died.	Remaining.
Guayaquill	5	6	8	2	1
Duran	1	.....	1	.....	.....
Huigra	.....	8	6	2	.....
Alausi	.....	5	1	2	2
Total	6	19	16	6	3

YELLOW FEVER.

Guayaquill	1	34	12	15	8
Agua Piedra	2	.....	2	.....	.....
Duran	.....	1	1	.....	.....
Yaguachi	.....	1	.....	.....	1
Milagro	3	9	7	4	1
Naranjito	1	3	2	2	.....
Bucay	.....	2	.....	1	1
Total	7	50	24	22	11

HONDURAS.

Malaria in Cuyamel.

From January 1 to May 27, 1913, there were reported present in hospital at Cuyamel 205 cases of malaria.

Cuyamel is a railway town on the Cuyamel River, with a population of about 2,000.

JAMAICA.

Quarantine Restrictions.

The following circular was issued under date of May 8, 1913, by the quarantine board of Kingston, Jamaica:

I have the honor, by direction of the quarantine board, to inform you that all previous circulars are canceled, and the restrictions set forth below are those in force until further notice.

LONDON, SOUTHAMPTON, BRISTOL, LIVERPOOL, GLASGOW, HABANA, NEW ORLEANS, AND SANTA MARTA.

Vessels from London, Southampton, Bristol, Liverpool, Glasgow, Habana, New Orleans, and Santa Marta, while alongside a wharf here must have rat guards, properly set, and of a pattern approved by the quarantine board, on all ropes and cables running from ship to shore.

PORTO RICO, HAITI, AND SAN DOMINGO.

Steamers from Porto Rico, Haiti, and San Domingo, while alongside here, must lie 8 feet off the wharf and have rat guards properly set and of a pattern approved by the quarantine board on all ropes and cables running from ship to shore, and at sunset gangways to be raised and not again lowered until sunrise.

Schooners from Porto Rico, Haiti, and San Domingo must anchor not less than 200 yards from the shore, load and unload all cargo from lighters.

AZORES, ARGENTINA, BRAZIL, VENEZUELA, PATAGONIA, THE CANARIES, AND CAPE VERDE ISLANDS.

Vessels from the Azores, Argentina, Brazil, Venezuela, Patagonia, the Canaries, and Cape Verde Islands may accept first-class passengers, and will be granted pratique on arrival here, provided they are 6 days out and the captain of each vessel produces a certificate from the British consul certifying that the vessel was anchored not less than a quarter of a mile from the shore and that cargo was not taken on board.

Vessels which have been alongside at the Azores, Argentina, Brazil, Venezuela, Patagonia, the Canaries, and Cape Verde Islands, or any other country infected with plague, in order to obtain full pratique here must produce a certificate of complete fumigation satisfactory to the board, certifying that the vessel was fumigated since being alongside, and 6 days must have elapsed since the fumigation took place. Cargo not accepted.

GRENADA, ST. LUCIA, AND PENSACOLA.

All on board vessels arriving from Grenada, St. Lucia, and Pensacola will be medically examined for smallpox by either the health officer at Port Royal or at the outport before pratique is granted.

Mails may in all cases be accepted.

CHARLES DON,
Secretary Quarantine Board.

JAPAN.

Hookworm Disease.

During the month of November and December, 1912, among the intending emigrants from Japan to the United States about 70 out of every 100 were found to have hookworm disease. Some cases were detained in Yokohama under treatment by the native doctors for many weeks before being pronounced cured, and many became discouraged from the long treatment and returned to their homes in the country without being cured.

Some emigrants supposed to be cured and holding certificates of cure and freedom from hookworm disease given by local practitioners of medicine, were found to be infected with hookworm on examination on arrival at American ports. A number of these certificates have been returned to this country with a letter of inquiry relative to hookworm in Japan from the Department of Commerce and Labor.

Since the first day of January, 1913, the official medical officer appointed by the Japanese Government has issued certificates to intending emigrants from Japan to American ports; and his certificate indicates that the person holding it is free from trachoma and hookworm.

Inspection cards issued by this office are given to the passengers holding certificates from the official medical officer.

The percentage of those having hookworm among the intending emigrants is gradually decreasing, probably owing to the fact that intending emigrants are examined and treated for hookworm by the local doctors before presenting themselves for examination by the official medical examiner.

Although there are no statistics on hookworm in Japan, it is probable that the infection is generally disseminated by the use of human excrement in fertilization.

RUSSIA.

Requirements for Reporting Cases of Sickness and Disability.

According to article 16 of the sanitary regulations of 1905, every physician, whether engaged in private practice or in the Government service, is obliged to submit to the Government sanitary inspectors, having jurisdiction, a monthly report of patients treated by him in hospitals and of those treated in private practice. The reports do not include contagious diseases, every case of which is to be reported at once to the local sanitary inspector, a heavy punishment being imposed in case of negligence.

Every hospital and clinic keeps a detailed record of its patients. This report is also submitted to the Government sanitary inspector.

The reports of physicians and hospitals are collected by the Government sanitary inspectors, who at the end of the year submit a detailed report to the chief sanitary inspector of the ministry of the interior. The latter then issues a general report to the people

on the health of the whole population and on the organization of the medical profession. These reports are generally issued from one to one and a half years after the period of termination of the report.

According to article 741 of the sanitary laws of 1905 every physician, without exception, whether in Government service or in private practice, is bound under heavy penalty to report, to the local sanitary inspector, relative to every case of infectious or epidemic disease that comes to his knowledge.

Articles 856 and 857 of the civil law provide that physicians in private practice are to be fined 100 rubles ($50) for each nonreported case of contagious or epidemic disease that has become known to them, while a still heavier punishment is imposed upon the Government physicians; i. e., dismissal from their post or imprisonment for one year and four months.

TURKEY IN EUROPE.

Cholera.

Consul Kehl, at Saloniki, reported June 10 the occurrence of 12 cases of cholera at Orfani and 100 cases at Seres, in the vilayet of Saloniki.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX.

Reports Received During Week Ended June 13, 1913.

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Dutch East Indies:				
Java—				
Samarang	Mar. 8–17	3	3	
India:				
Bassein	Apr. 13–26	95	81	
Calcutta	Mar. 23–29		64	
	Mar. 30–Apr. 19		216	
Moulmine	Apr. 13–19	3	3	
Negapatam	do	1	1	
Turkey in Europe:				
Saloniki vilayet				June 10, 12 cases in Orfani and 100 cases in Seres.

PLAGUE.

Arabia:				
Aden	May 13–16	5	2	
Chile:				
Iquique	Mar. 16–May 10	7	2	
China:				
Fungshun	Apr. 25	10		
Hongkong	Apr. 20–May 3	16	15	June 13, cases, 22 present.
India:				
Calcutta	Mar. 23–29		50	
	Mar. 30–Apr. 19		221	
Mauritius	Mar. 23–Apr. 3	4		
Persia:				
Bushir	Apr. 27–May 10	12	10	
Philippine Islands:				
Manila	Apr. 20–26	1	1	
Turkey in Asia:				
Jiddah	Apr. 27–May 16	1	1	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received During Week Ended June 13, 1913—Continued.

SMALLPOX.

Places.	Date.	Cases.	Deaths.	Remarks.
Argentina:				
Buenos Aires	Mar. 1-31		1	
Austria-Hungary:				
Fiume	May 6-12	2	1	
Trieste	May 4-10	2		
Brazil:				
Pernambuco	Apr. 16-30		14	
Canada:				
Quebec	May 25-31	2		
Toronto	May 26-31	1		
Vancouver	May 18-24	2		
China:				
Amoy	Apr. 26			Present in vicinity.
Hongkong	Apr. 20-May 3	9	4	
Shanghai	Apr. 28-May 4	1	6	Deaths among natives.
Tientsin	Apr. 20-May 10		7	
Dutch East Indies:				
Java—				
Surabaya	Apr. 13-19	4	4	
France:				
Paris	May 4-10	5		
Gibraltar	Apr. 22-27	1		
Greece:				
Patras	May 12-25		4	
Great Britain:				
London	May 18-24	1		
Indo-China:				
Singapore	Apr. 20-26	2		
Japan:				
Nagahama quarantine station.	May 9	1		From S. S. Shingo Maru from Kobe to Yokohama.
Nagasaki	May 5-11	1	1	
Oita, Province	Apr. 1-30	1		
Osaka	Apr. 1-May 10	5		
Mexico:				
Aguascalientes	May 12-25		14	
Chihuahua	May 19-25		1	
Hermosillo	Apr. 25-31	18	4	
Mexico	Mar. 9-Apr. 19	127	50	
Progreso	May 24-30	2		
San Luis Potosi	Mar. 31-Apr. 5	1	1	
Portugal:				
Lisbon	May 4-17	11		
Russia:				
Libau	May 12-18	1		
Moscow	Apr. 20-May 3	8	2	
Odessa	Apr. 20-26	2		
St. Petersburg	Apr. 27-May 10	2	2	
Warsaw	Feb. 2-15	8	5	
Spain:				
Barcelona	May 18-24		22	
Cadiz	Apr. 1-30		1	
Valencia	May 11-24	7	1	
Sweden:				
Stockholm	Apr. 27-May 3	9	1	
Straits Settlements:				
Singapore	Apr. 13-19	1		
Turkey in Europe:				
Constantinople	Apr. 11-17		6	
Saloniki	May 12-18	2	3	
Turkey in Asia:				
Beirut	May 4-17	7		
Mersina	do	2	11	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports received from Dec. 27, 1912, to June 6, 1913.

CHOLERA.

Places.	Date.	Cases.	Deaths.	Remarks.
Bulgaria:				
Eski Saghara	Dec. 9	2		
Sofia	Nov. 21–Dec. 16	6	1	
Shumla	Dec. 30	18		
China:				
Amoy	Apr. 25			Present.
Foochow	Nov. 20–Dec. 2			Isolated cases.
Hongkong	Mar. 23–29	5	5	Among Chinese.
Shanghai				Total 1912: Cases, 10, in the foreign settlement.
Dutch East Indies:				
Borneo—				
Bandermasin	Nov. 22–30	5	5	
Pontrank	Oct. 6	1		
Samarinda	Oct. 9–Nov. 2	26	25	
Singkawang	Oct. 8–Nov. 1	2	2	
Celebes—				
Batangmata	Mar. 8–14			Present.
Java—				
Batavia	Nov. 9–Dec. 31	40	28	And Tanjong Priok, the harbor.
Do	Jan. 19–Mar. 29	145	111	Mar. 31–Apr. 5, 11 fatal cases.
Madioen	Sept. 15–Nov. 9	192	105	
Do	Jan. 31–Feb. 22	15	10	
Megalang	Oct. 7–12	9	6	
Pasoeroean Residency	Sept. 20–26	2	1	
Samarang	July 19–Dec. 26	591	485	
Do	Dec. 27–Feb. 27	10	11	
Surabaya	Oct. 16–Nov. 28	4	3	
Sumatra—				
Air Tiris	Dec. 3–22	11	11	
Benkoelen	Nov. 3–30	3	1	
Koeoh	Dec. 3–15	4	9	
Jambi	Sept. 18–24	1		
Roembo	Dec. 3–15	2	2	
Telokbetong	Nov. 1–Dec. 31	181	20	
India:				
Bassein	Jan. 25–Apr. 12	142	122	
Bombay	Nov. 17–May 3	221	157	
Calcutta	Nov. 9–Mar. 8		573	
Cochin	Oct. 10–Nov. 9	6	6	
Do	Feb. 17–23	5	5	
Madras	Nov. 24–Apr. 5	38	37	
Moulmine	Feb. 23–Apr. 12	8	8	
Negapatam	Nov. 11–Apr. 12	42	42	
Rangoon	Nov. 1–Dec. 28	3	3	
Do	Dec. 29–Mar. 31	38	36	
Indo-China: Saigon	Aug. 20–Oct. 27	42	38	
Japan				Total year 1912: Cases, 2,722; deaths, 1,678, exclusive of Taiwan. Epidemic, Aug. 1, 1912–Mar. 3, 1913: Cases, 2,634; deaths, 1,696, including cases p. 2233, Vol. XXVII, and p. 859, Vol. XXVIII.
Prefectures—				
Akita	Dec. 2	1	1	
Chiba	Nov. 21–Mar. 3	116	83	
Ehime	Sept. 21–Dec. 2	52	21	
Fukuoka	Aug. 1–Dec. 2	816	531	
Fukushima	Dec. 5	1		
Hiogo	Sept. 27–Nov. 24	137	100	
Hiroshima	Sept. 21–Nov. 23	49	32	
Ibariki	Dec. 6	2	2	
Iwate	Dec. 16	2	1	
Kagawa	Oct. 12–Nov. 21	15	10	
Kagoshima	Sept. 21–Oct. 18	11	5	
Kanagawa	Sept. 25–Feb. 4	122	94	Including Yokohama.
Yokohama	Sept. 29–Jan. 9	39		Sept. 25–Dec. 7: 9 cases from vessels.
Kochi	Oct. 19–Dec. 4	25	14	
Kioto	Sept. 21–Nov. 1	5	5	
Kumamoto	....do	15	9	
Minami Tokaki gun	Sept. 15–Dec. 2			40 cases not included in total.
Nagasaki	....do	188	112	Including Nagasaki city, and with outlying islands, 134 deaths.
Oita	Sept. 21–Dec. 5	38	21	
Okayama	Sept. 21–Nov. 22	67	39	
Osaka	Sept. 21–Mar. 3	165	108	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

CHOLERA—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Japan—Continued.				
Prefectures—Continued.				
Saga	Sept. 21–Dec. 3	109	76	
Saitama	Oct. 12–18	3	2	
Shidzuoka	Oct. 19–Mar. 3	90	33	
Shimane	To Mar. 3	2		
Taiwan (Formosa)				Total year 1912: Cases, 333; deaths, 256.
Tokyo	Sept. 23–Feb. 4	314	217	
Tokushima	Sept. 15–Dec. 1	8	5	
Wakamatsu	Nov. 26			1 case not included in total.
Wakayama	Oct. 19–Nov. 16	13	12	
Yamaguchi	Sept. 21–Nov. 26	267	162	
Yamanchi	Feb. 3	1	1	
Russia:				
Odessa	Jan. 8–21	5	2	Nov. 18–20: 1 case from s. s. Bosnian, from Constantinople. Confined in the quarantine barracks.
Servia:				
Pirot	Apr. 10	5		Among returning soldiers and prisoners.
Siam:				
Bangkok	Oct. 13–Mar. 22		8	
Straits Settlements:				
Singapore	Nov. 17–23	2	2	
Do	Jan. 27–Apr. 12	6	2	
Turkey in Asia				Total, Nov. 17–23: Cases, 160; deaths, 218.
Adana—				
Adana	Nov. 17–Dec. 2	2		
Aleppo—				
Aleppo	Nov. 24–Dec. 2	5	3	
Alexandretta	do	3	2	
Angora—				
Angora	Nov. 24–Dec. 11	29	23	
Balikesir	Nov. 24–Dec. 2		1	
Beirut—				
Merdijioun	Dec. 3–11		15	
Tavariyeh	Dec. 13–22			Present.
Brusa	Nov. 17–Dec. 11	26	38	
Castamoni	Nov. 17–Dec. 2	6	4	
Dierbekir	do	8	2	
Hedjaz—				
Jedda	Nov. 25–Dec. 14	395	393	Among returning pilgrims.
Medina	Dec. 3–11		6	
Mekka	Nov. 17–23	111	172	Dec. 3–11: Deaths, 3,007.
Ismidt	Nov. 17–Dec. 2	3	1	
Kartal	Dec. 30–Feb. 12	9	3	
Khodavendikar—				
Karassi	Jan. 30–Feb. 12		2	
Mosul	Nov. 17–Dec. 2		2	
Sinope	Dec. 3–11	1	4	
Smyrna	Nov. 17–Dec. 2	3	1	
Syria—				
Haifa	Dec. 21		1	
Tiberias	Dec. 3–25	129	68	
Tarsus	Nov. 24–Dec. 2	2	1	
Turkey in Europe:				
Constantinople	Dec. 3–Jan. 28	1,598	787	Total, Nov. 5–Jan. 28: Cases, 2,515; deaths, 1,245.
Do	Mar. 12–Apr. 28	15	5	New outbreak.
Kavala	Apr. 1		1	
Zanzibar	Nov. 8–Dec. 21	131	130	Total, Aug. 5–Dec. 23: Cases, 943; deaths, 912, including previous reports from Mwera, Chwaka, and Mokoton. Chwaka district, Oct. 4–Dec. 31, 332 cases, not included in previous reports.
At sea				Nov. 18–20: 1 fatal case on s. s. Bosnian, en route from Constantinople to Odessa.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

YELLOW FEVER.

Places.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Bahia	Jan. 24–Apr. 5	16	8	
Manaos	Jan. 5–May 10	25	25	
Para				Case reported May 10, p. 953, from the Brazilian steamer Mararia May 6, and placed in observation hospital, where he died May 9.
Pernambuco				Year 1912: Deaths, 41.
British Gold Coast:				
Akkra	Mar. 22			Present. Apr. 26 free.
Ecuador:				
Agua Piedra	Dec. 1–31	7	4	
Do	Jan. 1–Mar. 31	10	6	
Bucay	Nov. 15–Dec. 31	3	2	
Do	Jan. 1–Apr. 30	6	3	
Duran	Nov. 1–Dec. 31	3	3	
Do	Jan. 1–Apr. 30	16	9	
Guayaquil	Nov. 1–Dec. 31	25	16	
Do	Jan. 1–Apr. 30	154	79	
Milagro	Nov. 1–Dec. 31	2	2	
Do	Jan. 1–Apr. 30	40	22	
Naranjito	Nov. 1–Dec. 31	3	2	
Do	Jan. 1–Apr. 30	22	12	
Yaguachi	Apr. 1–30	1		
Mexico:				
Merida	Apr. 2–10	1	1	From Campeche.
Senegal:				
Dakar	Dec. 7			Present.
Venezuela:				
Caracas	Nov. 1–Dec. 31	9	2	In September 2 deaths and in October 1 death not previously reported. Feb. 7, 1 case.
Do	Jan. 1–31	2		

PLAGUE.

Afghanistan:				
Tchebel-Bagdareh	Sept. 1–30			And vicinity, 100 deaths daily. Present to Oct. 29.
Arabia:				
Aden	Apr. 9–May 13	41	27	
Oran—				
Debai	Feb. 16			Present.
Argentina:				
Herrera	Feb. 22	9	6	Southeastern part of Entre Rios.
Rosario	Jan. 4	4	1	Endemic.
Brazil:				
Bahia	Jan. 12–Apr. 5	20	8	
Pernambuco	Nov. 1–Jan. 31		11	Year 1912: Deaths, 20.
Rio de Janeiro	Nov. 3–Apr. 26	26	10	Year 1912: Cases, 21. Mar. 22, 3 cases in isolation hospital.
Santos	Dec. 1	2	2	
British East Africa	Jan. 14–Feb. 26		17	
Dagoretti	Jan. 14–Feb. 5	1		
Khambu	Nov. 16–Dec. 8	2		
Do	Feb. 27–Mar. 31	1		
Kisumu	Dec. 8–28	7		
Do	Jan. 14–Mar. 31	9		
Mombasa	Oct. 1–Dec. 25	16	12	Free Nov. 18.
Do	Feb. 6–26	5		
Nairobi	Nov. 16–Mar. 31	21	1	
Canary Islands:				
Teneriffe—				
Santa Cruz	Feb. 21–27		5	
Chile:				
Antofagasta	Feb. 12			Present.
Iquique	Jan. 8–Mar. 8	11	5	
Taltal	Oct. 22–28	3		
China				Apr. 25, present in Chaochowfu and vicinity, Chaoyang, Chenghai, Kityang, Fungshun, Mi-ou, San-ho-pa, and Puning.
Amoy	Apr. 6–12		1	Jan. 17–Apr. 15, few sporadic cases. Pneumonic form present and in vicinity. May 26, epidemic.

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
China Continued.				
Kulangsu	Apr. 6–12			Increasing.
Hai An	Mar. 8			Present in pneumonic form in 2 localities in vicinity about 48 miles from Amoy.
Hoihow	Nov. 1–30			Present.
Kulangsu	Jan. 17	3		International settlement of Amoy.
Hongkong	Jan. 12–Apr. 19	18	18	Total January to September, 1912: Cases, 1,848; deaths, 1,728. May 14, still present.
Manchuria	Dec. 14			Present along the railway between Harbin and Chang-Chun.
Pakhoi	Dec. 1–31	30		Feb. 1, from 10 to 12 deaths daily.
Shanghai	Nov. 18–Dec. 15		2	Dec. 18, present in vicinity of the French settlement. Total 1912: Cases, 9, among natives.
Do	Mar. 31–Apr. 6		1	
Swatow	Apr. 25	3	2	Jan. 9 and Apr. 3 present in vicinity.
Colombia:				
Santa Marta	Apr. 11			Not bacteriologically confirmed.
Dutch East Indies				Total Jan. 1–Mar. 31: Cases, 1,636; deaths, 1,559.
Java—				
Kediri	Oct. 6–Dec. 31	406	377	
Do	Jan. 1–Mar. 31	443	201	
Madioen	Oct. 6–Jan. 1	98	96	
Do	Jan. 1–Mar. 31	156	146	
Malang				Total, year 1912: Cases, 1,477; deaths, 1,406, among natives, including Pasoeroean Residency.
Do	Jan. 1–Mar. 31	949	928	
Surabaya	Oct. 6–Jan. 4	43	43	
Do	Jan. 1–Mar. 31	47	46	
Ecuador:				
Alausi	Apr. 1–30	5	2	
Duran	Nov. 1–Dec. 31	4	1	
Do	Jan. 1–Mar. 31	9	6	
Guayaquil	Nov. 1–Dec. 31	139	52	
Do	Jan. 1–Apr. 30	145	77	And vicinity, Jan. 1–Feb. 24: Cases, 123; deaths, 61. Apr. 1–30, in Guayaquil and vicinity: Cases, 19; deaths, 6.
Huigra	Apr. 1–30	8	2	
Milagro	Dec. 1–31	8	1	
Do	Jan. 1–Mar. 31	10	2	
Egypt				Total, Jan. 1–Dec. 31, 1912: Cases, 884; deaths, 441. Jan. 1–May 8, 1913: Cases, 335; deaths, 176.
Alexandria	Mar. 2–May 4	44	32	
Cairo	Dec. 30	1	1	
Port Said	Dec. 29	1	1	
Do	Jan. 1–Mar. 5	4	2	
Provinces—				
Assiout	Jan. 22–May 1	34	31	
Behera	Nov. 29–Dec. 12	2	1	
Do	Mar. 10–May 5	6	6	
Benisouef	Jan. 22–May 4	8	5	
Charkieh	Nov. 29–Dec. 12	3	2	
Do	Jan. 2–Mar. 22	16	7	
Fayoum	Jan. 19–May 6	43	21	
Galioubeh	Jan. 1–May 7	10	2	
Garbieh	Jan. 1–May 8	8	3	
Do	Nov. 23–Dec. 17	3		
Girgeh	Jan. 1–Apr. 30	14	14	
Do	Dec. 21–25	1	1	
Gizeh	Jan. 1–May 7	35	11	
Keneh	Apr. 15–May 4	2	2	
Menouf	Jan. 1–May 2	48	22	
Do	Oct. 1–Dec. 31	13	7	
Minieh	Nov. 28–Dec. 29	7	4	
Do	Jan. 23–May 7	48	12	
Sohag	Apr. 4	15	6	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Hawaii:				
Honokaa	May 2	1	1	
Kukuihaele	Jan. 11-31	2	2	
Paauhau	May 8	1	1	
India:				
Bombay	Nov. 17-May 3	1,621	1,274	
Calcutta	Nov. 9-Mar. 22	.....	151	
Madras	Dec. 29-Jan. 4	1	1	
Karachi	Nov. 19-Dec. 28	14	13	
Do	Mar. 2-May 3	124	102	
Rangoon	Oct. 1-Nov. 30	68	68	
Do	Dec. 29-Mar. 31	349	337	
Provinces	.....	.....	.....	Total, Oct. 27-Dec. 28: Cases, 25,212; deaths, 19,863.
Delhi	Oct. 27-Dec. 28	31	14	
Bombay	do	6,785	5,121	
Madras	do	1,833	1,337	
Bengal	do	60	59	
Bihar and Orissa	do	1,269	1,025	
United Provinces	do	7,844	6,001	
Punjab	do	952	709	
Burma	do	95	85	
Central Provinces	do	404	301	
Mysore	do	1,506	1,114	
Hyderabad	do	1,498	1,212	
Central India	do	70	60	
Rajputana	do	2,802	2,824	
Kashmir	do	3	1	
Provinces	.....	.....	.....	Total, Dec. 29-Apr. 5: Cases, 108,835; deaths, 91,792.
Delhi	Dec. 29-Apr. 5	155	116	
Bombay	do	6,896	5,245	
Madras	do	2,448	1,854	
Bengal	do	398	376	
Bihar and Orissa	do	19,963	16,405	
United Provinces	do	64,313	55,778	
Punjab	do	7,232	5,821	
Burma	do	1,960	1,762	
Central Provinces	do	664	486	
Mysore	do	1,851	1,379	
Hyderabad	do	1,221	1,005	
Central India	do	58	43	
Rajputana	do	1,646	1,486	
Kashmir	do	69	35	
Northwest Provinces	Dec. 29-Feb. 1	1	1	
Indo-China: Saigon	Aug. 20-Apr. 7	68	42	
Japan:				
Taiwan (Formosa)	.....	.....	.....	Total, year 1912: Cases, 223; deaths, 185.
Kagi	Mar. 18-Apr. 12	68	45	Apr. 2, 10 cases.
Mauritius	Oct. 11-Mar. 13	260	116	Feb. 27, 1 case.
Morocco:				
Mehedia	Apr. 24	4	.....	Among the military.
Rabat	Nov. 1	3	.....	Do.
New Caledonia: Numea	Sept. 17-Dec. 2	62	32	7 cases with 2 deaths among Europeans.
Persia: Bushir	Apr. 13-26	13	12	
Peru:				
Departments—				
Ancachs	July 1-Aug. 31	8	3	
Do	Jan. 1-Mar. 31	8	3	
Arequipa	July 1-Aug. 31	12	5	
Do	Jan. 1-Mar. 31	14	10	Mollendo, Apr. 1-27: Cases, 3; deaths, 4.
Callao	July 1-31	1	1	Present in September.
Do	Jan. 1-Mar. 31	14	9	
Ferrenaje	Dec. 23-Jan. 12	1	.....	
Ica	do	1	.....	
Lambayeque	Jan. 1-Mar. 31	168	81	Do.
Chiclayo	Apr. 1-27	2	3	
Jayanca	Dec. 2-22	.....	.....	Present.
Libertad	July 1-Aug. 31	20	9	
Do	Jan. 1-Mar. 31	107	52	
Humachuco	Mar. 25	.....	.....	Do.
Cosma	Dec. 2-22	.....	.....	Do.
Paijan	do	.....	.....	Do.
Salaverry	Dec. 23-Jan. 12	1	.....	
San Pedro	Dec. 2-Jan. 12	27	.....	
Do	Apr. 1-27	6	6	
Trujillo	Dec. 2-Jan. 12	44	.....	
Do	Apr. 1-27	6	7	

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

PLAGUE—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Peru—Continued.				
Departments—Continued.				
Lima	July 1-Aug. 31	7	4	
Do	Apr. 1-27	6	6	
Piura	Jan. 1-Mar. 31	21	13	
Catacaos	Dec. 2-Jan 12			Present.
Paita	do			Do.
Piura	Dec. 23-Jan. 12			Do.
Sulana	Dec. 2-22			Do.
Philippine Islands:				
Manila	Nov. 10-Mar. 29	18	14	
Provinces				Third quarter, 1912: Cases, 8; deaths, 7. Fourth quarter, 1912: Cases, 39; deaths, 33 Jan. 1-Mar. 8: Cases, 5; deaths, 5.
Russia:				
Don, territory	Apr. 2	40	21	In Popova, Kiraejevo, and vicinity, including report p. 1094.
Libau	Mar. 1-31		1	
Moscow	Dec. 29-Jan. 11	3	1	
Transbaikal district—				
Verneudinsk	Oct. 18-28	3	3	Near Nerchinsk.
Trans-Caspian Ter., Merv	Dec. 9-21	29	29	Pneumonic.
Siam: Bangkok	Jan. 5-Mar. 22		27	
Turkey in Asia: Jiddah	Mar. 10-May 10	29	26	

SMALLPOX.

Arabia: Aden	Jan. 14-May 5	15	2	
Abyssinia: Adis Ababa	Nov. 24-Dec. 21			Present.
Algeria:				
Departments—				
Algiers	Oct. 1-31	11		
Constantine	do	11		
Do	Feb. 1-28	12		
Oran	Oct. 1-Dec. 31	170	10	
Do	Jan. 1-Feb. 28	25	5	
Argentina:				
Buenos Aires	Nov. 1-Dec. 31		7	
Do	Feb. 1-28		2	
Australia:				
Darwin	Feb. 12			1 case in quarantine from s. s. Eastern en route from Japan to Sydney.
Austria-Hungary:				
Bohemia	Apr. 13-19	2		
Dalmatia	Feb. 9-15	1		
Galicia	Nov. 10-Dec. 7	3		
Do	Apr. 15-26	3		
Flume	Jan. 14-Apr. 24	7	1	
Moravia	Jan. 17-Apr. 21	3		
Trieste	Dec. 8-Apr. 21	55		Returning travelers.
Belgium: Antwerp	Mar. 24-31	1		
Brazil:				
Para	Dec. 8-Feb. 1	2		
Pernambuco	Nov. 1-Apr. 15		186	Year 1912: Deaths, 762.
Rio de Janeiro	Nov. 3-Apr. 19	94	26	
British Columbia: Vancouver	Feb. 2-Mar. 1	2		
British East Africa:				
Mombasa	Dec. 1-31	17	10	
Do	Feb. 1-28	16	3	
Canada:				
British Columbia—				
Fernie	Feb. 23-Mar 1	12		Apr. 22, 1 case in vicinity.
Vancouver	Apr. 13-25	2		
Victoria	May 4-10	2		
Manitoba—				
Winnipeg	Mar. 30-May 17	17		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Canada—Continued.				
Ontario—				
Cornwall	Mar. 16-22	2		
Fort William	Mar. 31-Apr. 16	4		
Hamilton	Jan. 1-Mar. 31	60		
Niagara Falls	Feb. 1-Apr. 21	21		
Ottawa	Jan. 4-May 17	50		
Port Arthur	Mar. 16	1		
Sault de St. Marie	May 4-10	1		
Toronto	Dec. 1-May 17	25		
Windsor	Feb. 9-Apr. 26	12		
Quebec—				
Grosse Isle Quarantine				May 15, 1 case on s. s. Canada from Trieste, via Patras, Naples, and Lisbon.
Montreal	Dec. 15-May 24	176	1	
Quebec	do	35		
St. Johns	Jan. 12-May 24	27	1	
Chile:				
Punta Arenas	Oct. 31-Nov. 30	3		Oct. 31, 1 case in vicinity.
Do	Jan. 1-31	1		
China:				
Amoy	Mar. 15-Apr. 12		2	
Kulangsu	Jan. 12-Feb. 29	1	1	Apr. 5, present.
An Kho	Jan. 4			Epidemic; 2 days' journey from Amoy.
Chungking	Nov. 3-Apr. 6			Present.
Dalny	Jan. 12-18	1	1	
Hankow	Dec. 29-Jan. 4	1		
Harbin	Dec. 1-31	6		
Do	Jan. 17-Feb. 13	2		
Hoihow	Jan. 3			Do.
Hongkong	Nov. 24-Apr. 19	78	54	
Nanking	Dec. 7-Mar. 8			Do.
Shanghai	Nov. 18-Apr. 27	51	183	Deaths among natives. Year 1912: Cases, 144.
Tientsin	Nov. 17-Apr. 19	9	20	
Costa Rica: Limon	Feb. 1	2	2	
Dutch East Indies:				
Java—				
Batavia	Nov. 9-Mar. 15	42	12	Jan. 5-11, 10 cases, with 5 deaths in the district, mainly in Samarang.
Samarang	Oct. 4-24	57	23	
Do	Jan. 5-Mar. 15	906	202	
Surabaya	Mar. 16-29	2	1	
Egypt:				
Alexandria	Dec. 9-May 13	71	21	
Cairo	Nov. 12-Apr. 23	42	7	
Port Said	Dec. 3-31	1	1	
France:				
Marseille	Nov. 1-Apr. 30		28	
Nantes	Jan. 5-Mar. 31	8		
Nice	Feb. 1-28	2		
Paris	Dec. 1-May 3	58	1	
Germany				Total: Nov. 24-30, 5 cases not included in report, p. 2231, vol. xxvii, Dec. 1-May 17, 76 cases.
Breslau	Jan. 19-25	1		
Hamburg	Jan. 10-Mar. 29	4		
Kehl	Feb. 1-28		1	
Gibraltar	Dec. 9-Mar. 16	3	1	
Great Britain:				
Hull	Mar. 8-Apr. 1	5		
Liverpool	Jan. 4-Apr. 26	4	1	
London	Apr. 27-May 10	2		
Newcastle on Tyne	Feb. 9-15	15		
Sheffield	Feb. 26-Mar. 2	1		
Greece:				
Athens	Feb. 10-Apr. 5	1	3	
Patras	Mar. 3-May 11		39	Epidemic.
Piræus	Jan. 1-Mar. 13	119	49	
Hawaii: Paauhau	May 2	1		
Honduras: Trujillo	Feb. 2-8	1		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
India:				
Bombay	Nov. 17–May 3	292	132	
Calcutta	Dec. 1–Mar. 8		27	
Karachi	Dec. 1–Apr. 12	70	23	
Madras	Dec. 1–Apr. 19	49	11	
Moulmine	Feb. 23–Mar. 1	1		
Rangoon	Oct. 1–Mar. 31	180	49	
Indo-China: Saigon	Aug. 20–Dec. 23	3	3	
Italy:				
Leghorn				Year 1912: Cases, 315; deaths, 19.
Naples	Mar. 16–May 10	7	1	
Palermo	Dec. 15–Apr. 12	40		
Turin	Feb. 3–Mar. 2	5		
Japan				Total, year 1912: Cases, 14; deaths, 1.
Hokkaido	Jan. 1–31	1		
Nagasaki	Mar. 9–Apr. 27	5	3	Nov. 1–30, 1 case.
Taiwan (Formosa)				Year 1912: Cases, 4.
Kangawaken	Jan. 1–31	1		
Yokohama				Jan. 1–13, 2 cases from s. s. Pera from London via ports.
Malta	Feb. 1–28	1		
Mauritius	Mar. 22			Epidemic.
Mexico				Feb. 16: Cases, 1,500 to 2,000, with 10 per cent of deaths; mainly along the western coast. Jan. 30–Feb. 16: Present in Aguierre, Cajame, Corral, Esperanza, Navojca, Puga, and Tarin.
Aguascalientes	Dec. 9–May 11		51	
Cananea	May 22			Many fatal cases.
Chihuahua	Dec. 9–Apr. 13		24	
Durango	Dec. 1–Mar. 31		157	
Guadalajara	Jan. 5–May 3	32	3	
Hermosillo	Feb. 16–May 24	32	2	
Juarez	Mar. 1–29	2		
Manzanillo	May 7			2 cases among troops.
Mazatlan	Jan. 1–7	2		
Mexico	Nov. 17–Mar. 8	118	43	
Monterey	Mar. 24–May 8		7	
Nogales	May 23	3		
Salina Cruz	Nov. 17–May 3	17	7	
San Luis Potosi	Sept. 15–Mar. 15	9	3	
Sonora—				
Agua Zarca	Jan. 30	2		
Nogales	do	1		
Tamaulipas, State	Apr. 16			Epidemic in Chamal, 100 miles north of Tampico.
Veracruz	Jan. 26–May 17	20	1	1 case imported from Pasco del Macho. Apr. 13–May 3: Cases, 28; deaths, 4.
Netherlands: Rotterdam	Dec. 22–28		1	
Newfoundland: St. Johns	Feb. 23–May 17	17		
Peru:				
Callao	Sept. 1–14			Present.
Lima	do			Do.
Mollendo	Nov. 24–Dec. 7	5	1	
Salaverry	Dec. 4–11	1		
Philippine Islands: Manila	Dec. 21			1 case removed from s. s. Maulban to the San Lazaro Hospital. Third quarter, 1912: Cases, 9; deaths, 0. Fourth quarter, 1912: Cases, 16; deaths, 0.
Portugal: Lisbon	Dec. 1–May 3	53		
Roumania				Total, Oct. 1–31: Cases, 6.
Russia:				
Batoum	Dec. 1–31	1		
Libau	Dec. 16–Apr. 20	5		
Moscow	Dec. 8–Apr. 19	50	11	
Odessa	Nov. 17–Apr. 12	9	3	
St. Petersburg	Nov. 24–Apr. 26	132	18	
Warsaw	Sept. 22–Feb. 1	43	40	
Riga	Dec. 1–31	1		
Siberia—				
Omsk	Jan. 1–27	7		
Vladivostok	Dec. 15–28	4	1	
Do	Jan. 1–13	4		
Servia: Belgrade	Dec. 22–28	2		

CHOLERA, YELLOW FEVER, PLAGUE, AND SMALLPOX—Continued.

Reports Received from Dec. 27, 1912, to June 6, 1913—Continued.

SMALLPOX—Continued.

Places.	Date.	Cases.	Deaths.	Remarks.
Siam: Bangkok	Nov. 10-Mar. 22		11	
Spain:				
Almeria	Dec. 1-31		40	
Do	Jan. 1-Apr. 30		23	
Barcelona	Dec. 1-May 10		211	
Cadiz	Nov. 1-Dec. 31		7	
Do	Feb. 1-Mar. 31		2	
Madrid	Nov. 1-Dec. 31		34	
Do	Jan. 1-Apr. 30		87	
Malaga	Dec. 1-31		1	
Seville	do		27	
Do	Jan. 1-Apr. 30		28	
Valencia	Nov. 14-May 10	138	4	
Straits Settlements:				
Singapore	Nov. 24-Apr. 5	16	5	
Penang	Mar. 31-Apr. 5	1		
Sweden: Stockholm	Oct. 8-21	3		Apr. 13-26, 27 cases.
Switzerland:				
Cantons—				
Aargau	Dec. 15-Apr. 5	7		
Basel	Nov. 14-May 13	51		
Grisons	Dec. 1-Feb. 1	15		
Luzerne	Apr. 13-19	1		
St. Gall	Apr. 16-22		1	
Vaud	Apr. 27-May 3	1		
Turkey in Asia:				
Adana	Apr. 26			Present.
Beirut	Dec. 8-Apr. 26	96	14	
Damascus	Mar. 8			Do.
Mersina	Mar. 9-May 3	110	69	
Smyrna	Nov. 24-Dec. 14		5	
Do	Jan. 19-Mar. 22		11	
Tarsus	Apr. 12-26			Do.
Trebizond	Mar. 9-15			Do.
Turkey in Europe:				
Constantinople	Dec. 1-28		43	
Do	Dec. 29-May 10		169	
Saloniki	Apr. 21-May 11	5	9	
Union of South Africa: Durban	Feb. 2-8	1		Imported.
Uruguay:				
Montevideo	Dec. 1-31	3		Last previous case in May, 1912. Feb. 18, present
Do	Jan. 1-Feb. 28	3	1	
West Indies:				
Barbados	Mar. 8	1		From Grenada.
Grenada				May 8, 3 cases, in vicinity of St. Georges.
Concord	Apr. 23	1		
La Filette	do	1		
Pomme Rose	Apr. 17	3		
Zanzibar	Nov. 8-Feb. 7	22	3	

SANITARY LEGISLATION.

MUNICIPAL ORDINANCES, RULES, AND REGULATIONS PERTAINING TO PUBLIC HEALTH.

DULUTH, MINN.

Housing—Construction and Alterations of Tenement and Dwelling Houses. (Ord. Nov. 29, 1912.)

CHAPTER I.—GENERAL PROVISIONS.

SECTION 1. *Title.*—This ordinance shall be known as the Housing Code.

SEC. 2. *Definitions.*—In construing this ordinance words used in the present tense include the future, words in the masculine gender include the feminine and neuter, the singular number includes the plural, and the plural the singular. The word "person" includes a corporation as well as a natural person, and for the purposes of this ordinance (and for said purposes only) the following words and terms shall be construed as set forth below, to wit:

(1) A "tenement house" is a house or building, all, or any portion of which, is rented, leased, let, or hired out to be occupied or is occupied, or is intended, arranged, or designed to be occupied as the home or residence of more than two families living independently of each other and doing their cooking upon the premises. A "tenement house hereafter erected" shall include any building heretofore erected and hereafter altered, remodeled, or repaired so as to be used as a tenement house.

(2) A "dwelling house" is a house or building, all, or any portion of which, is rented, leased, let, or hired out to be occupied or is occupied, or is intended, arranged, or designed to be occupied as the home or residence of not more than two families living independently of each other and doing their cooking on the premises. All such houses and buildings, whether built singly or in conjunction with others as double houses or attached or semidetached rows, shall be deemed dwelling houses.

(3) A "yard" is an open, unoccupied space on the same lot with, and immediately adjoining, a tenement house or dwelling house.

(4) A "court" is an open, unoccupied space, other than a yard, on the same lot with a tenement house or dwelling house. A court not extending to the street or yard is an inner court. A court extending to the street or yard is an outer court. An unoccupied space extending from the street to the yard along the lot line shall be deemed an outer court.

(5) A "sewer" is a public sewer or a private sewer tributary thereto and accepted by the city engineer.

(6) A "hall" is a passageway not designed or used for living purposes, including sleeping or cooking. A "public hall" is a hall not within a separate suite of rooms. A "private hall" is a hall within a separate suite of rooms.

(7) A "room" is any subdivision of a house partitioned on all sides from floor to ceiling, except for doorways or windows.

(8) A "closet" is a room which is designed and suitable to be used and is used only for the storage of inanimate objects.

(9) An "alcove" is any portion of a room partitioned off by fixed or movable partitions of any material, by curtains or portières, or by other contrivance or device.

(10) A "basement room" is a room partly underground, but having at least one-half of its height above the average level of the adjacent ground.

(11) A "cellar room" is a room more than one-half below the average level of the adjacent ground.

(12) A "stair hall" includes the stairs, stair landings, and those portions of the public halls through which it is necessary to pass in going between the entrance floor and the roof.

(13) A "basement" is a story partly underground, but having at least one-half of its height above the average level of the adjacent ground.

(14) A "cellar" is a story more than one-half below the average level of the adjacent ground.

(15) The "first story" of a building shall be deemed to be the lowest story, the ceiling of which is 6 feet or more above both the level of the curb and the level of the adjacent ground. In determining the height of any building by stories the stories thereof shall be numbered from such first story upward.

(16) A "fireproof tenement house" is one the walls of which are constructed of brick, stone, cement, iron, or other hard, incombustible material, and in which there are no wood beams or lintels, and in which the floors, roofs, stair halls, and public halls are built entirely of brick, stone, cement, iron, or other hard, incombustible material, and in which no woodwork or other inflammable material is used in any of the partitions, furrings, or ceilings. But this definition shall not be construed as prohibiting, elsewhere than in the stair halls or entrance halls, the use of wooden flooring on top of the fireproof floors or the use of wooden sleepers or wooden handrails, door and window frames, doors, sash, and inside trimmings.

(17) A "wooden building" is a building of which the exterior walls or a portion thereof are of wood.

(18) The word "shall" is always mandatory and not directory, and denotes that the house shall be maintained in all respects according to the mandate as long as it continues to be a tenement house or dwelling house.

(19) Wherever the words "ordinances," "regulations," "building department," or "health department" occur in this ordinance, they shall be construed as if followed by the words "of the city of Duluth." Wherever the words "is occupied" are used in this ordinance, applying to any building, such words shall be construed as if followed by the words "or is intended, arranged, or designed to be occupied." Wherever the word "street" is used in this ordinance, it shall be construed as including any public alley 16 feet or more in width.

(20) By "building department" shall be meant the building inspector of the city of Duluth, or any officer or employee of the building department by him duly authorized to enforce this ordinance, or any provision thereof. By "health department" shall be meant the health commissioner of the city of Duluth, or any officer or employee under said commissioner duly authorized by him to enforce this ordinance, or any provision thereof.

(21) The "height" of a tenement house or dwelling house is the perpendicular distance measured in a straight line from the curb level, or from the finished grade line of the lot, where such grade is higher than the curb, to the highest point of the roof beams in the case of flat roofs, and to the average of the height of the gable in the case of high-pitched roofs, the measurements in all cases to be taken through the center of the façade of the house. Where a building is on a corner lot and there is more than one grade or level, the measurements shall be taken through the center of the façade on the street having the lowest elevation.

(22) A "lot" is the plat of ground covered by and adjacent to a tenement house or a dwelling house and devoted exclusively to the purposes of such house, as shown by the plan of such lot furnished to the building department pursuant to section 87 of this ordinance. By "corner lot" is meant a lot situated at the junction or intersection of two streets. Any portion of the width of such lot distant more than 50 feet from the property line opposite shall not be regarded as part of a corner lot, but shall be subject to the provisions of this ordinance respecting interior lots except that a corner lot occupied or to be occupied by only a fireproof tenement house may be 150 feet wide, or less, at its maximum width. An "interior lot" is a lot other than a corner lot.

(23) The front of a lot is that boundary line which borders on a street. In the case of a corner lot, the owner may elect, by statement on his plans, either street boundary line as the front. The rear of a lot is the side opposite to the front. In the case of a triangular or gore lot bounded by two streets the rear shall be the side not bordering on a street.

(24) An "apartment" is a suite of rooms in a tenement house or dwelling house, partitioned off from the public hall or stairway.

SEC. 3. *Buildings converted or altered.*—A building not erected for use as a tenement house or dwelling house, if hereafter converted or altered to such use, shall thereupon become subject to all the provisions of this ordinance affecting tenement houses or dwelling houses hereafter erected.

SEC. 4. *Alterations and changes in occupancy.*—No tenement house or dwelling house hereafter erected shall at any time be altered so as to be in violation of any provision of this ordinance. And no tenement house or dwelling house erected prior to the passage of this ordinance shall at any time be altered so as to be in violation of those provisions of this ordinance applicable to such tenement houses or dwelling houses.

SEC. 5. *Law and ordinances not to be modified.*—Except as herein otherwise specified, every tenement house or dwelling house shall be constructed and maintained in conformity with the existing law and ordinances, but no regulation or ruling of any municipal officer shall modify or dispense with any provision of this ordinance.

SEC. 6. *Time for compliance.*—All improvements specifically required by this ordinance upon tenement houses or dwelling houses erected prior to the date of its passage shall be made within one year from said date.

CHAPTER II.—NEW BUILDINGS.

(In this chapter will be found all the provisions which must be observed when a person proposes to build a new tenement house or dwelling house, or to convert or alter to such purposes a building which is not then a tenement house or dwelling house.)

TITLE I.—LIGHT AND VENTILATION.

SEC. 7. *Percentage of lot occupied.*—No tenement house or dwelling house hereafter erected, and no building heretofore erected and hereafter altered or remodeled to be a tenement house or dwelling house, shall occupy, either alone or with other buildings, a greater percentage of the area of the lot than as follows: In the case of corner lots, not more than 75 per cent; in the case of corner lots with streets on three sides, not more than 80 per cent; in the case of interior lots, not more than 60 per cent; the measurements shall be taken at the ground level. Outside stairs and fire escapes, porches, unless open, and platforms shall be considered a part of the lot occupied. No measurements of lot area shall include any portion of any street or alley, and unoccupied space shall not be counted to the credit of more than one lot.

SEC. 8. *Height.*—No tenement house or dwelling house hereafter erected shall exceed in height the width of the widest street upon which it stands, unless such house be set back from such street a distance at least equal to the excess of such height over the width of such street.

SEC. 9. *Yards.*—Behind and immediately adjacent to every tenement house or dwelling house hereafter erected there shall be a yard extending for its entire depth across the entire width or length of the lot and at every point open from the ground to the sky unobstructed. The depth of said yard shall be measured from the extreme rear of the house toward the rear line of the lot and shall not include porches or other projections. In the case of tenement houses and dwelling houses hereafter erected, such yard shall be equal in area to at least 10 per cent of the area of the lot and shall never be less than 10 feet in depth in every part where such tenement or dwelling houses do not exceed three stories in height. For every tenement house or dwelling house hereafter erected, which is more than three stories in height, the minimum depth for such yard shall be increased 2 feet for each additional story.

SEC. 10. *Courts.*—No court which is used to provide the lighting and ventilation required by this title shall be less in any part than the minimum sizes prescribed in this section. The minimum width of a court for a tenement house two stories in height shall be 10 feet and such width shall increase 2 feet for each additional story. The minimum width of a court for a dwelling house shall be 5 feet for a two-story building and such width shall increase 1 foot for each additional story. The length of an inner court shall never be less than twice the minimum width above prescribed, and the length of an outer court, other than one extending from the street to the yard, shall never be greater than twice its minimum width. When a court is located on the lot line such court shall in every case extend to the street and a portion of such court, not to exceed one-half, may be located on the abutting premises, provided the owner of said abutting premises files with the register of deeds of St. Louis County, Minn., an easement, duly executed and acknowledged, binding himself, his heirs, administrators, and assigns, to keep such portion of the adjoining space unbuilt upon and available for light and air as will make the combined courts not less in size than the minimum dimensions prescribed above. No tenement house or dwelling house hereafter erected shall have more than one court inclosed on all sides.

SEC. 11. *Extensions or offsets to courts.*—Extensions or offsets to courts in tenement houses or dwelling houses hereafter erected will be permitted, but no such extension or offset shall be less than 5 feet in width in any part, and its depth shall never be greater than its width; such dimensions shall be deemed the minimum dimensions for a two-story building and shall increase 1 foot for each story above two stories.

SEC. 12. *Courts open at top.*—No court shall be covered by a roof or skylight, but every court shall be at every point open from the bottom thereof to the sky unobstructed.

SEC. 13. *Air intakes.*—Every inner court shall be provided with a horizontal air intake at the bottom. Such intake shall always communicate directly with the street or yard, and shall consist of a passage not less than 2 feet wide and 5 feet high, which shall be left open, or be provided with an open gate at each end.

SEC. 14. *Angles in court.*—Nothing contained in the foregoing sections concerning courts shall be construed to prevent windows at the angles of said courts provided that the running length of the wall containing such windows does not exceed 6 feet in tenement houses or 4 feet in dwelling houses.

SEC. 15. *Frontage on street.*—No tenement house or dwelling house shall hereafter be erected, nor shall any building be hereafter erected, altered, or enlarged next to and not across the street from any such house in such manner that such tenement house or dwelling house shall be left without at least one side thereof having an unobstructed frontage upon a street; but nothing in this section shall prohibit the erection of dwelling houses facing on a general court which opens on a street and which is not less than 30 feet in width and not greater in depth, in any case, than twice its width.

SEC. 16. *Rooms, size of.*—In every tenement house and dwelling house hereafter erected all rooms, except water-closet compartments, closets, and bathrooms, shall be

of the following minimum sizes: In each apartment there shall be at least one room containing not less than 150 square feet of floor area, and each other room shall contain at least 100 square feet of floor area: *Provided*, That the above provisions as to sizes of rooms shall not apply to a room used as a kitchen where there is, in the same apartment, at least one other room of not less than 150 square feet of floor area. Each room shall be in every part not less than 8½ feet high from the finished floor to the finished ceiling: *Provided, however*, That an attic room need be 8½ feet in height in but two-thirds of its area where there are not less than 750 cubic feet of air space within said room. But this section shall not apply to dwelling houses occupied or to be occupied by not more than one family, built separate from and not contiguous to any other house or building.

SEC. 17. *Windows.*—In every tenement house and dwelling house hereafter erected every room, including alcoves, water-closet compartments, and bathrooms, shall have at least one window containing not less than 10 square feet of glass, opening directly upon the street or upon a yard or court of the dimensions specified in this chapter, and such window shall be so made as to open from the top its full width, and it shall be so located as to properly light all portions of the room. Where only one wall of a room contains a window the opposite wall shall not be distant from said window more than three times the height of the top of the window, or highest window in said wall, from the floor. The total window area of each room shall be at least one-eighth of the floor area of the room: *Provided, however*, That in water-closet compartments and bathrooms such window may contain a minimum of 6 square feet of glass.

SEC. 18. *Alcoves and alcove rooms.*—In every tenement house or dwelling house hereafter erected an alcove in any room shall be separately lighted and ventilated as provided for rooms in the foregoing sections and shall be not less than 70 square feet in area. This section shall not apply to dwelling houses occupied or to be occupied by not more than one family, and built separate from and not contiguous to any other house or building, or part thereof.

SEC. 19. *Privacy.*—In every tenement house hereafter erected, in each apartment containing more than four rooms, besides closets, and in each apartment occupied or to be occupied by more than one family, access to every living room and bedroom and to at least one water-closet compartment shall be had without passing through any bedroom.

SEC. 20. *Public halls.*—In every tenement house hereafter erected every public hall shall have at each story at least one window opening directly upon the street or upon a yard or court of the dimensions specified in this chapter. Such window shall be at the end of said hall with the plane of the window at right angles to the hall's axis. Any part of a public hall which is shut off from any other part of said hall by a door shall be deemed a separate hall within the meaning of this section.

SEC. 21. *Windows and skylights for public halls, size of.*—One at least of the windows provided to light each public hall or part thereof shall contain at least 10 square feet of glass. In every tenement house of three or more stories there shall be in the roof directly over each stair well a ventilating skylight provided with ventilators or fixed or movable louvres, having an effective ventilating area of 40 square inches or more.

SEC. 22. *Windows for stair halls, size of.*—In every tenement house hereafter erected there shall be provided for each story at least one window to light and ventilate each stair hall, which shall contain at least 10 square feet of glass. A sash door shall be deemed the equivalent of a window in this and the two next preceding sections, provided that such door contains the amount of glazed surface prescribed for such windows.

SEC. 23. *Light in private halls.*—Every private hall in such house, unless lighted by a window, shall have at least one of the doors opening therefrom into a properly lighted room, and provided with translucent glass, which glass shall be not less than 10 square feet in area.

TITLE 2.—SANITATION.

SEC. 24. *Basement and cellar rooms.*—In tenement houses and dwelling houses hereafter erected no basement room or cellar room shall be constructed, altered, converted, or occupied for living purposes other than for laundry purposes.

SEC. 25. *Cellars and spaces under floors.*—When the first story of any tenement house or dwelling house hereafter erected is occupied, or intended to be occupied, for living purposes, the floor thereof shall be at least 2 feet above the average grade of the adjacent ground, and the space beneath such floor shall be inclosed to prevent the accumulation of rubbish, but provided with ample ventilation and adequate drainage. All cellars and basements in such tenement house or dwelling house shall be properly lighted, ventilated, and drained in all their parts.

SEC. 26. *Courts, areas, and yards.*—In every tenement house and dwelling house hereafter erected all courts, areas, and yards shall be properly graded and drained, so that all water may drain freely into the street or sewer. And when necessary to secure such drainage, or to keep such premises in a sanitary condition, such courts, areas, or yards, or such portion thereof as the health department shall order, shall be properly concreted.

SEC. 27. *Water and water-closets in tenement houses.*—In every tenement house hereafter erected there shall be in each apartment a proper sink with running water. In every such house there shall be within each apartment a separate water-closet, located in the bathroom or in a separate compartment. Each such water-closet shall be placed in a compartment completely separated from every other water-closet; such compartment shall be not less than 3 feet wide, and shall be inclosed with plastered partitions, which shall extend to the ceiling. Every such compartment shall have a window opening directly upon the street or upon a yard or court of the minimum size prescribed in this ordinance. Every water-closet compartment hereafter placed in any tenement house shall be provided with proper means of lighting the same at night. If fixtures for gas or electricity are not provided in said compartment, then the door of said compartment shall be provided with translucent glass panels, not less in area than 4 square feet. The floor of every such water closet compartment, unless the same be placed in a bathroom, shall be made waterproof with asphalt, tile, stone, or some other nonabsorbing waterproof material; and such waterproofing shall extend at least 6 inches above the floor so that the said floor can be washed or flushed out without leaking. No drip trays shall be permitted. No water-closet fixtures shall be inclosed with any woodwork. Where in such tenement house there are apartments consisting of but one room, it shall be sufficient to provide one water-closet for each two such apartments. In such case, such water-closet shall not open into any apartment, but shall be accessible through a public hall, and the door thereof shall be provided with lock and keys; and such compartment and water-closet shall comply in all other respects with the provisions of this ordinance.

SEC. 28. *Water and water-closets in dwelling houses.*—In every dwelling house hereafter erected where public water mains are reasonably accessible, such house shall be provided with a proper sink therein with running water inside the house; and when such water mains are not accessible, such house shall have other water, suitable for all domestic uses, supplied either within the house or within reasonable distance thereof; and every such house which is also reasonably accessible to a public or private sewer shall be provided with a water-closet inside the house. Such water-closet shall be in a compartment completely inclosed in plastered walls extending to the ceiling, with a window not less than 6 square feet in area opening directly upon the street or upon a yard or court of the minimum dimensions prescribed in this ordinance and shall not be located in the cellar or basement: *Provided*, That where such house has two or more water-closets, one of them may be located in the basement or cellar, and, when so located, such water-closet and the compartment containing the same, shall, in all other

respects, comply with the provisions of this section. Where a sewer is not accessible, the closet shall consist of a privy vault, located in the yard, and constructed in accordance with the ordinance of the city relating thereto; and the structure containing such privy shall be provided with adequate means of ventilation.

SEC. 29. *Sewer connection.*—No tenement house shall hereafter be erected on any street unless there is city water accessible thereto, nor unless there is a sewer accessible thereto. No cesspool or privy vault or similar means of sewage disposal shall be used in connection with any such tenement house, but every such house shall have its plumbing system connected with a sewer before such house is occupied.

SEC. 30. *Plumbing.*—In all tenement houses hereafter erected where plumbing or other pipes pass through floors or partitions the openings around such pipes shall be sealed or made air-tight with plaster or other incombustible material, so as to prevent the passage of air or the spread of fire from one floor to another or from room to room. All plumbing work, except as otherwise specified in this ordinance, shall be in accordance with the plumbing regulations of said city.

TITLE 3.—FIRE PROTECTION.

SEC. 31. *Fireproof tenement, when required.*—No tenement house shall hereafter be erected exceeding three stories in height, unless it be a fireproof tenement house.

SEC. 32. *Scuttles and bulkheads.*—Every tenement house hereafter erected, exceeding two stories in height, and having a flat roof, shall have in the roof a bulkhead or a scuttle, not less than 2 by 3 feet in size. Such scuttle or bulkhead shall be covered with metal on the outside, and shall be provided with stairs or stationary ladder leading thereto and easily accessible to all tenants of the building. No scuttle or bulkhead shall be located in a closet or room, but shall be located in the ceiling of the public hall on the top floor and access through the same to the roof shall be direct and uninterrupted.

SEC. 33. *Stairs and public halls.*—Every tenement house hereafter erected, intended to be occupied by two or more families above the first story, shall have at least two independent flights of stairs with separate entrances leading from the entrance floor or the ground to the top story, and such stairs shall be accessible from each apartment, without passing through any other apartment; and each apartment shall have direct access from a room or private hall thereof to at least one of such flights of stairs: *Provided*, That one of said flights of stairs may consist of outside, open stairs, and balconies. Such stairs and balconies and all public halls shall each be at least 3 feet 6 inches wide in the clear. All stairs shall be constructed with a rise of not more than 8 inches and with treads not less than 10 inches wide and not less than 3 feet 6 inches long in the clear. Winding stairs will not be permitted.

SEC. 34. *Fireproof stairs and stair halls.*—In nonfireproof tenement houses hereafter erected which are three stories or more in height the stairs and stair halls shall be constructed of fireproof material throughout. The risers, stringers, and banisters shall be of metal, concrete, or stone. The treads shall be of metal, slate, concrete, or stone, or of hardwood not less than 1¼ inches thick. Wooden handrails to stairs will be permitted if constructed of hardwood. The floors of all such stair halls shall be constructed of iron or steel beams and fireproof filling, and no wooden flooring or sleepers shall be permitted. All such stairs and stair halls shall be inclosed on all sides with brick or other fireproof walls. There shall be no transom or sash opening from such stair hall to any other part of the house. Each stair hall shall be shut off from all nonfireproof parts of the building on each story by self-closing fireproof or hardwood doors: *Provided*, That if one of the flights of stairs required for such building be an outside stairway, it shall consist of balconies and stairways built of fireproof material.

SEC. 35. *Access to yard.*—In every tenement house hereafter erected access shall be had from a street to the yard.

SEC. 36. *Cellar stairs.*—In nonfireproof tenement houses hereafter erected exceeding two stories in height the inside cellar stairs shall be inclosed with fireproof walls and provided with self-closing doors at top and bottom. When the first floor of any such tenement house is used or intended to be used for business purposes, and the stairs leading to the cellar or basement are located beneath the stairs leading to the next upper floor, the stairs leading to the cellar or basement shall be fireproof and inclosed in fireproof walls, and such stairs leading to the cellar or basement shall be provided with self-closing fireproof doors at top and bottom.

SEC. 37. *Closet under first-story stairs.*—In tenement houses hereafter erected no closet of any kind shall be constructed under any staircase leading from the first story to the upper stories, but such space shall be left entirely open and kept clear and free from encumbrances.

SEC. 38. *Cellar entrance.*—In every tenement house hereafter erected exceeding three stories in height there shall be an entrance to the cellar or other lowest story from the outside of the said building.

SEC. 39. *Fire walls.*—Where dwelling houses are built in the form of double houses or terraces, or attached or semidetached rows, there shall be a fireproof wall separating each such house from each adjoining house, and such wall shall have no openings therein and shall extend from the floor of the basement or cellar to the outside of the sheathing of the roof to form a parapet wall: *Provided*, That this section shall not apply to double frame houses: *And provided further*, That such wall in double houses other than frame need extend only to the top of the attic joists.

SEC. 40. *Wooden tenement houses.*—No wooden tenement houses exceeding two stories in height shall hereafter be erected, and no wooden building not now used as a tenement house shall be hereafter altered or converted to such use so as to be in violation of the provisions of this section.

CHAPTER III.—ALTERATIONS.

(In this chapter will be found all the provisions which must be observed when a person proposes to alter an existing tenement house or dwelling house.)

SEC. 41. *Percentage of lot occupied.*—No tenement house or dwelling house shall hereafter be enlarged or its lot be diminished, nor shall any other building be placed on its lot so that a greater percentage of the lot shall be occupied by buildings or structures than as provided in section 7 of this ordinance.

SEC. 42. *Height.*—No tenement house or dwelling house shall be increased in height so that the said building shall exceed the width of the widest street or alley on which it stands, unless such house be set back from the street a distance at least equal to the excess of such height over the width of such street.

SEC. 43. *Yards.*—No tenement house or dwelling house shall hereafter be enlarged or its lot be diminished so that the yard shall be less in size than the respective minimum sizes prescribed in section 9 of this ordinance. The measurements in all cases shall be taken from the extreme rear of the building toward the rear lot line, and across the full width of the lot, and shall not include porches or other projections. Such yard or other space shall be at every point open from the ground to the sky.

SEC. 44. *New courts in existing buildings.*—No inner court hereafter constructed in a tenement house erected prior to the passage of this ordinance shall be less in area than 64 square feet, nor less than 8 feet in its least dimension in any part; and no outer court so constructed shall be less than 6 feet in width. The above widths may be reduced not more than one-half by complying with the provisions of section 10 of this ordinance relating to an easement on abutting property.

SEC. 45. *Additional rooms and halls.*—Any additional room or hall that is hereafter constructed or created in a tenement house shall comply in all respects with the provisions of chapter two of this ordinance, except that such rooms may be of the same height as the other rooms on the same story of the house.

SEC. 46. *Rooms and halls, lighting and ventilation of.*—No tenement house or dwelling house shall be so altered that any room or public hall or stairs shall have its light or ventilation diminished in any way not approved by the health department.

SEC. 47. *Alcoves and alcove rooms.*—No part of any room in a tenement house or dwelling house shall hereafter be inclosed or subdivided, wholly or in part, by a curtain, portieres, fixed or movable partition, or other contrivance or device unless such part of the room so inclosed or subdivided shall contain a window, as required by sections 16 and 17 of this ordinance, and shall have a floor area of not less than 70 square feet. But this section shall not apply to a single dwelling house, built entirely separate from and not contiguous to any other house or building or part thereof.

SEC. 48. *Syklights.*—All new skylights hereafter placed in a tenement house shall be provided with ridge ventilators having a minimum opening of 40 square inches, and also with either fixed or movable louvers or with movable sashes, and shall be of such size as to permit adequate light and ventilation.

SEC. 49. *Water-closet accommodations.*—Every new water-closet hereafter placed in a tenement house or dwelling house erected prior to the passage of this ordinance, except one provided to replace a defective or antiquated fixture in the same location, shall comply with the provisions of sections 27 and 28, respectively, of this ordinance relative to water-closets in tenement houses and dwelling houses hereafter erected, except that such water-closet need not be placed within an apartment in a tenement house.

SEC. 50. *Fireproof tenements.*—No tenement house shall hereafter be altered so as to exceed three stories in height, unless it be fireproof.

SEC. 51. *Roof stairs.*—No stairs leading to the roof in any tenement house shall be removed or replaced with a ladder.

SEC. 52. *Stairways.*—No public hall or stairs in a tenement house shall be reduced in width so as to be less than the minimum width prescribed in section 33 of this ordinance.

SEC. 53. *Alterations of wooden tenement houses.*—No existing wooden tenement house shall hereafter be increased in height so as to be more than two stories.

SEC. 54. *Enlargement of wooden tenement houses.*—No wooden tenement house containing more than two apartments shall hereafter be enlarged or extended unless the building when completed shall comply with section 33 of this ordinance, except that a wooden extension not exceeding in total area 70 square feet may be added to an existing wooden tenement house, provided such extension is used solely for bathrooms or water-closets.

CHAPTER IV.—MAINTENANCE.

(In this chapter will be found all the provisions which an owner must observe with regard to the maintenance of a tenement house or dwelling house).

SEC. 55. *Public halls, lighting of, in the daytime.*—In every tenement house exceeding two stories in height, where the public halls and stairs are not sufficiently lighted to permit a person to read ordinary newspaper print in every part thereof without the aid of artificial light, the owner of such shall keep a proper light burning in the hallway, near the stairs, upon each floor, as may be necessary, from sunrise to sunset.

SEC. 56. *Public halls, lighting at night.*—In every tenement house exceeding two stories in height, or occupied or intended to be occupied by more than four families, a proper light shall be installed and shall be kept burning by the owner in the public hallways near the stairs upon the entrance floor and upon the floor above the entrance floor of said house every night from sunset to sunrise throughout the year, and upon all other floors of the said house from sunset until 10 o'clock in the evening.

SEC. 57. *Water-closets in cellars.*—No water-closet shall be maintained in the cellar or basement of any tenement house without a special permit in writing from the health department. Under no circumstances shall the general water-closet accommodations of a tenement house be permitted in the cellar or basement thereof.

SEC. 58. *Water-closet accommodations.*—In every tenement house existing prior to the passage of this ordinance there shall be provided at least one water-closet for every two families. Every dwelling house existing prior to the passage of this ordinance shall be provided with a water-closet; provided that two adjacent houses, when owned by the same owner and neither of which is occupied by more than one family, may have one water-closet in common.

SEC. 59. *Water supply in tenement houses.*—Every tenement house shall have water furnished in sufficient quantity at one or more places accessible to each family on at least one of the floors occupied by or intended to be occupied by said family. But a failure in the general supply of water by the city authorities shall not be construed to be a failure on the part of such owner, provided that proper and suitable appliances to receive and distribute such water have been provided in said house.

SEC. 60. *Water supply in dwelling house.*—Every dwelling house shall at all times be supplied with a sufficient quantity of water; in case of houses hereafter erected such water shall be supplied as provided in section 28; in case of houses erected prior to the passage of this ordinance such water shall be supplied within the house or within a reasonable distance of the house; city water shall be supplied if reasonably accessible; and if not reasonably accessible, then other water suitable for all domestic uses must be supplied.

SEC. 61. *Catch basins.*—In all tenement houses where sinks are not provided inside the house conveniently accessible to the tenants, one catch basin for every four families shall, where a sewer is accessible, be provided in the yard or court, level with the surface thereof and at a point easy of access to the tenants, and such catch basin shall be connected with the sewer. In all dwelling houses where such sinks are not provided similar catch basins shall be provided, at least one for every two adjacent houses.

SEC. 62. *Water-closets and sinks.*—In all tenement houses the floor or other surface beneath and around water-closets and sinks shall be maintained in good order and repair, and whenever used by more than one family such floor or other surface if of wood shall be kept well painted with light-colored paint.

SEC. 63. *Basement and cellar rooms.*—Hereafter in tenement houses or dwelling houses erected prior to the passage of this ordinance no cellar room shall be occupied for living purposes. No basement room of such houses shall be so occupied for any purpose other than cooking or laundry without a written permit from the health department, and such permit shall be kept readily accessible in the main living room of the apartment containing such room and no such permit shall be issued unless all the following conditions are complied with:

(1) Such room shall be at least 7 feet high in every part from the floor to the ceiling

(2) There shall be appurtenant to such room the use of a water-closet.

(3) The lowest floor shall be waterproof and damp proof.

(4) Such rooms shall have sufficient light and ventilation, shall be well drained and dry, and shall be fit for human habitation.

SEC. 64. *Cellar walls and ceilings.*—The cellar walls and ceilings of every tenement house shall be thoroughly whitewashed or painted a light color by the owner and shall be so maintained, and he shall keep such walls and ceilings clean and sanitary.

SEC. 65. *Repairs.*—Every tenement house or dwelling house and all the parts thereof shall be kept in good repair, and the roof shall be kept so as not to leak.

SEC. 66. *Cleanliness of building.*—The occupant or tenant of every dwelling house and of every apartment in a tenement house shall keep the same, and every part thereof, and the yards and courts exclusively belonging to the dwelling house or apartment occupied by him, free of all accumulation of dirt, filth, garbage, or othel refuse matter. The owners of every such tenement house and dwelling house shall cause every part of such tenement house or dwelling house and all cellars, halls, passages, areas, yards, courts, and spaces appurtenant thereto to be kept free from

all accumulation of dirt, filth, garbage, or other refuse matter. Such owner, tenant, and occupant shall thoroughly cleanse every portion of such tenement house or dwelling house, or the portion owned or occupied, as the case may be, by him, whenever ordered so to do by the health commissioner.

SEC. 67. *Walls of courts.*—The walls of all inner courts and of all outer courts opening to the yard only, unless built of a light-color brick or stone, shall be thoroughly whitewashed or painted a light color by the owner and shall be so maintained. Such whitewash or paint shall be renewed whenever necessary.

SEC. 68. *Walls and ceilings of rooms.*—In all tenement houses the health department may order the walls and ceilings of every room that does not open directly on the street or yard to be kalsomined white or painted with white paint when needed to improve the lighting of such room, and may order this to be renewed as often as may be necessary. Any violation of such order or orders shall be deemed a violation of this ordinance.

SEC. 69. *Receptacles for ashes, garbage, and rubbish.*—The owner of every tenement house or dwelling house shall provide for said building proper and suitable conveniences or receptacles for ashes, rubbish, garbage, and other refuse matter. No garbage chutes shall be constructed, maintained, or used.

SEC. 70. *Prohibited uses.*—No horse, cow, calf, swine, sheep, goat, or fowl shall be kept in a tenement house or dwelling house or nearer than 15 feet to any such house, and no tenement house shall be used for a lodging house nor as a place of public assemblage.

SEC. 71. *Combustible materials.*—No tenement house nor any part thereof nor of the lot upon which it is situated shall be used as a place of storage for any article dangerous or detrimental to life or health or for the storage or handling of hay, straw, excelsior, cotton, paper stock, feathers, or rags, or for the storage or handling of any easily combustible articles without a written permit from the Duluth fire department and under such regulations as that department shall prescribe. Such permit shall be effective only one year from the date of issue and only for the person in whose name it is issued and shall be revokable upon violation thereof. Nothing in this section shall apply to the storage or handling of noncombustible drugs by a pharmacy duly licensed by the State Board of Pharmacy of Minnesota.

SEC. 72. *Bakeries and fat boiling.*—No bakery and no place of business in which fat is boiled shall be maintained in any tenement house hereafter erected which is not fireproof throughout, and no bakery and no place of business in which fat is boiled shall be maintained in any tenement house erected prior to the passage of this ordinance which is not fireproof throughout, unless the ceiling, sidewalls, and all exposed iron or wood girders or columns within the said bakery or within said place where fat boiling is done are made safe by fireproof materials around the same, and there shall be no openings, either by door or window or otherwise, between said bakery or said place where fat is boiled in any tenement house and the other parts of the said building, except that a dumb-waiter communicating between the place where the baking is done or the fat is boiled and the store above may be maintained if entirely inclosed in a brick shaft with walls not less than 8 inches thick, without any opening whatever, except one door opening into the bakeshop and one door opening into the bakery store. Such openings shall each be provided with a fireproof door so arranged that when one door is opened or partly closed the other door shall be entirely closed.

SEC. 73. *Other dangerous businesses.*—There shall be no transom, window, or door opening from any portion of a tenement house where paint, oil, spirituous liquors, or drugs are stored for the purpose of sale or otherwise, into a hall or stairway used by the tenants.

SEC. 74. *Overcrowding.*—No person or persons shall occupy or permit the occupancy of a room in a tenement house or dwelling house so that there shall be less than 400 cubic feet of air space in said room to each person over 12 years of age and 300 cubic feet of air space to each child under 12 years of age living or sleeping in such room.

SEC. 75. *Infected and unfit houses to be vacated.*—Whenever a tenement house or dwelling house, or any part thereof, is infected with contagious disease, or is unfit for human habitation, or dangerous to life or health by reason of want of repair, or of defects in the drainage, plumbing, ventilation, or of the construction of the same, or by reason of the existence on the premises of a nuisance likely to cause sickness among the occupants of said house, the health department shall issue an order requiring all persons therein to vacate such house, or part thereof, within not less than 24 hours nor more than 10 days for the reason to be mentioned in said order. And it shall thereupon and thereafter be deemed a violation of this ordinance to occupy or permit the occupancy of such house or part thereof until such order has been complied with. The health department, whenever it is satisfied that the danger from said house or part thereof has ceased to exist, or that it is fit for human habitation, may revoke said order, or may extend the time within which to comply with the same.

SEC. 76. *Fire escapes.*—The owner of every tenement house shall keep all the fire escapes thereon in good order and repair, and whenever rusty shall have them properly painted with two coats of paint. No person shall at any time place any incumbrance of any kind before or upon any such fire escape.

SEC. 77. *Scuttles, bulkheads, ladders, and stairs.*—All scuttles and bulkheads and all stairs or ladders leading thereto shall be easily accessible to all tenants of the building, and kept free from incumbrance, and ready for use at all times. No scuttle and no bulkhead door shall at any time be locked with a key, but either may be fastened on the inside by moveable bolts or hooks.

CHAPTER V.—IMPROVEMENTS.

(In this chapter will be found all the provisions which an owner must observe with regard to the improvements required in a tenement house or dwelling house erected prior to the passage of this ordinance.)

SEC. 78. *Rooms, lighting and ventilation of.*—No room in a tenement house erected prior to the passage of this ordinance shall hereafter be occupied for sleeping purposes unless it shall have a window or windows with a total area of 8 square feet of glass opening directly upon a street or upon a yard not less than 10 feet deep or above the roof of an adjoining building or upon a court of not less than 25 square feet in area open to the sky without roof or skylight. Every room for living purposes other than sleeping which does not comply with the above provisions shall be provided with a sash window opening into an adjoining room in the same apartment, which latter room opens directly on the street or on a yard of the above dimensions by means of a window or windows at least 15 square feet in area between the pulley stiles. Said sash window shall be a vertically-sliding pulley-hung sash not less than 15 feet in area between the pulley stiles; both halves shall be made so as to readily open and the lower half shall be glazed with translucent glass, and, so far as possible, it shall be in line with windows in the said outer room opening on the street or yard, so as to afford a maximum of light and ventilation. Where such rooms are already provided either with windows, window openings, glass sliding doors, or large alcove openings to adjoining rooms, but do not comply with all the provisions of this section, the health department when satisfied that no material improvement in the light and ventilation of such rooms can be had that would warrant the providing of new windows of the size and kind specified may permit the occupancy of such rooms for living purposes in the following cases, provided such improvements or alterations as may be practicable to secure better light, ventilation, or sanitation and as are required by said department are made by the owner:

(1) Where there is an existing window or window opening from such interior to an outer room, and such window or opening is not less than 10 square feet in area.

(2) Where there is an existing sliding door with translucent glass or an alcove opening of sufficient size from such interior room to an outer room.

(3) Where, owing to the size of partitions, arrangement of rooms, locations of fixed closets or stairs, or the interposition of air shafts, it is impracticable to provide a sash window of the required size and a window as large as practicable is provided.

SEC. 79. *Public halls, lighting of.*—In every tenement house whenever a public hall on any floor is not light enough in the daytime to permit a person to read ordinary newspaper print in every part of such hall without the aid of artificial light, the wooden panels in the doors located at the ends of the public halls and opening into rooms shall be removed and ground glass or other translucent glass or wire glass panels of an aggregate area of not less than 4 square feet for each door shall be substituted, or said public hall may be lighted by a window at the end thereof, with the plane of the window at right angles to the axis of the said hall, said window opening upon the street or upon a yard or court. The provisions of this section shall not relieve any person from complying with the provisions of section 55 hereof.

SEC. 80. *Public halls, lighting and ventilation of.*—In all tenement houses erected prior to the passage of this ordinance the public halls and stairs shall be provided with as much light and ventilation to the outer air as is practicable. All new skylights hereafter placed in such houses shall be provided with ridge ventilators or fixed or movable louvers, or with movable sashes, so that there may be an effective ventilating area of 40 square inches or more.

SEC. 81. *Water-closets and sinks.*—In all tenement houses erected prior to the passage of this ordinance the woodwork inclosing sinks or water-closets shall be removed, and the space underneath and around the same shall be left open. The floors and wall surfaces beneath and around the sink or water-closet shall be put in good order and repair, and whenever used by more than one family such floor or other surface if of wood shall be kept well painted with light-colored paint.

SEC. 82. *Water-closets in tenement houses.*—In connection with all tenement houses erected prior to the passage of this ordinance there shall be provided and installed at least one water-closet for every two families in each such house. When a sewer is accessible, such water-closets shall be or durable, nonabsorbent material, properly sewer connected, and with individual traps and properly connected flush tanks, providing an ample flush of water to thoroughly cleanse the bowl. Each such water-closet shall be located in a compartment completely separated from every other water-closet, and such compartment shall be located in or contiguous to the house and shall contain a window of not less than 4 square feet in area, opening directly to a street or yard, or on a court not less than 25 feet in area and open to the sky, or such compartment shall be adequately lighted and ventilated by a skylight. The floors of such water-closet compartments shall be waterproof, as provided in section 27 of this ordinance, unless the same be placed in a bathroom. Where a sewer is not accessible, such water-closets shall consist of privy walls located in the yard and constructed in accordance with the ordinances of the city relating thereto. In such cases the structure containing the water-closets shall not exceed 10 feet in height. Such structure shall be provided with a ventilating skylight in the roof of an adequate size, and each water-closet shall be located in a compartment completely separated from every other water-closet. Proper and adequate means for lighting the structure at night shall be provided.

SEC. 83. *Water-closets in dwelling houses.*—All new water-closets hereafter placed within a dwelling house erected prior to the passage of this ordinance, or in a compartment contiguous thereto, shall be located and installed in accordance with the requirements of section 28 of this ordinance. Where outside closets are constructed, they shall be in accordance with the ordinance of the city relating to such closets.

SEC. 84. *Basement and cellars.*—The floor of the cellar or basement of every tenement house shall be free from dampness, and when necessary shall be concreted with 4 inches of concrete of good quality and with a finished surface. The cellar ceiling of

every tenement house shall be plastered when necessary to prevent the damp air of the cellar from reaching the rooms above.

SEC. 85. *Means of egress.*—Whenever a tenement house is not provided with sufficient fire escapes or with sufficient means of egress in case of fire, the building department may order such additional fire escapes and other means of egress as may be necessary.

SEC. 86. *Scuttles, bulkheads, ladders, and stairs.*—Every tenement house exceeding two stories in height erected prior to the passage of this ordinance shall have in the roof a bulkhead or a scuttle, which shall be not less than 24 inches by 36 inches. All scuttles shall be covered on the outside with metal, and shall be provided with stairs or stationary ladders leading thereto and easily accessible to all tenants of the building. No scuttle shall be located in a room, but all scuttles shall be located in the ceiling of the public hall on the top floor, and access through the scuttle to the roof shall be direct and uninterrupted. If located in a closet, said closet shall open from the public hall, and the door to it shall be permanently removed, or shall be fastened only by movable bolts or hooks without key locks. When deemed necessary by the building department, scuttles shall be hinged so as to readily open. Every bulkhead in a tenement house shall have stairs with a guide or hand rail leading to the roof, and such stairs shall be kept free from incumbrance at all times. No scuttle and no bulkhead door shall at any time be locked with a key, but either may be fastened on the inside by movable bolts or hooks. All key locks on scuttles and on bulkhead doors shall be removed.

CHAPTER VI.—REQUIREMENTS AND REMEDIES.

SEC. 87. *Permit to commence building.*—Before the construction or alteration of a tenement house or dwelling house, or the alteration or conversion of a building for use as a tenement house or dwelling house, or any improvement involving structural changes in any tenement house or dwelling house is commenced, and before the construction or alteration of any building or structure on the same lot with a tenement house or dwelling house, the owner, or his agent or architect, shall submit to the building department a detailed statement in writing, setting forth the specifications for such house or building, upon blanks or forms to be furnished by such department, and also full and complete indelible copies of the plans for such work, together with a plan of the lot on which the same is or is to be situated, showing the location, character, and size of all buildings thereon, and the exact dimensions of said lot, together with its legal description: *Provided*, That the plans and specifications for a dwelling house costing less than $2,000 need be only such as will advise the building department of the character of the proposed building, the sufficiency of such plans and specifications to be determined by said building department. Such statement shall give in full the name and residence, by street and number, of the owner or owners of such house or building. If such construction, alteration, conversion, or improvement is proposed to be made by any other person than the owner of the land in fee, such statement shall contain the full name and residence, by street and number, not only of the owner of the land but of every person interested in such tenement house or dwelling house, either as owner, lessee, or in any representative capacity. In case any part of a court appurtenant to the proposed building is to be on lands not owned by the owner of such building, a copy of the easement hereinbefore provided for, duly certified by the register of deeds, shall be filed with such statement. Such statement and all matters required to be filed therewith, as herein provided, shall be verified by the affidavit of the person making the same.

The statements and affidavits herein provided for may be made by the owner or by his agent. No person, however, shall be recognized as the agent of the owner unless he shall file with the said department a written instrument, signed by such owner, wherein said owner designates said person as his agent and agrees to be bound

by and be responsible for the statements and acts of said agent. Such specifications, plans, and statements shall be first submitted to the health commissioner for his approval. If he finds that same comply with all the provisions for lighting, ventilation, and sanitation as required by the terms of this ordinance and with other health regulations of the city, he shall approve same in writing and transmit them to the building inspector; otherwise he shall refuse to approve same and return them to the person submitting them. After said specifications, plans, and statements have been approved by the health commissioner and by him transmitted to the building inspector, said building inspector shall cause all such plans and specifications to be examined. If such plans and specifications conform to all the provisions of this ordinance and all other ordinances relating to buildings, they shall be approved by the building department and a permit issued as provided by the ordinance relating to buildings, and the plans, specifications, and statements shall be filed in the office of the building inspector and be retained as part of its permanent records. No plans or specifications shall be approved by the building inspector which have not first been approved by the health commissioner as herein provided. But such approval by the health commissioner shall be only a recommendation to the building inspector and shall not require him to approve said plans or specifications in any respect. The health commissioner and building inspector may, from time to time, approve changes in any plans and specifications previously approved by them, provided the plans and specifications when so changed shall be in conformity with the law and ordinances. The construction, alteration, conversion, or improvement of such tenement house or dwelling house, building, or structure or any part thereof shall not be commenced until after the filing of such specifications, plans, and statements, and the issuance of the permit as herein provided. The construction, alteration, conversion, or improvement of such house, building, or structure shall be in accordance with such approved specifications and plans. Any permit or approval which may be issued by the building department, but under which no work has been done above the foundation walls within three months from the time of the issuance of such permit or approval, shall expire by limitation, but may be renewed without cost for a further period of three months. Such permit shall be subject to revocation, as provided in said ordinances relating to buildings. When a plan of the lot for any tenement house or dwelling house has been furnished to the building inspector, as herein provided, no part of such lot shall ever afterwards be included in the plan of any other lot so furnished to the building inspector unless the remainder left of the original lot be sufficient to conform to all the requirements of sections 7 and 9 of this ordinance. And no part of any lot of which the plan has been furnished to the building inspector, as herein provided, shall ever be built upon otherwise than as shown by such original plan, except so that the remainder of the lot not covered by such later building or buildings shall always be sufficient to conform to all the requirements of sections 7 and 9 of this ordinance.

SEC. 88. *Certificate of compliance.*—No building hereafter constructed as or altered into a tenement house or dwelling house shall be occupied in whole or in part for human habitation until the issuance by the building inspector of a certificate countersigned by the health commissioner that said building conforms in all respects to the requirements of this ordinance. Such certificates shall be issued within 10 days after written application therefor, if said building at the date of such applications shall be entitled thereto.

SEC. 89. *Unlawful occupation.*—When any tenement house or dwelling house, or the lot on which it is situated, or any building on the same lot therewith, fails to comply with any of the provisions of this ordinance as to its erection, alteration, maintenance, and improvement, such tenement house or dwelling house shall not be used for human habitation, and any person who shall occupy, or who shall permit or cause any person to occupy, any house, or any part thereof, in violation of any of the provisions hereof,

or while such house, lot, or building, or any part thereof, remains in violation of this ordinance, shall be deemed guilty of a violation of this ordinance, and every day's continuance of such violation shall be deemed a separate offense.

SEC. 90. *Penalties for violation.*—Any owner, agent, manager, tenant, lessee, or occupant of any tenement house or dwelling house, or any architect, builder, or foreman violating, disobeying, neglecting, or refusing to comply with any of the provisions of this ordinance, shall, upon conviction thereof, be fined not more than $100, or be imprisoned for a period not exceeding 85 days.

SEC. 91. *Registry of owner's name.*—Every owner of a tenement house and every lessee of the whole house, or other person having control of a tenement house, shall, within three months after the passage of this ordinance, file in the health department a notice containing his name and address, and also a description of the property, by street number and by legal description, giving the number of the lot and block, in such manner as will enable the said department easily to find the same; and also the number of apartments in each house, the number of rooms in each apartment, and the number of families occupying the apartments; and the failure to file such notice shall be deemed a misdemeanor and be punishable as provided in section 90 of this ordinance.

SEC. 92. *Registry of agent's name.*—Every owner or lessee of a tenement house or dwelling house shall file in the department of health a notice containing his own name and address or the name and address of an agent of such house, for the purpose of receiving service of notice or other process, and also a description of the property by street number in such manner as will enable the department of health easily to find the same.

SEC. 93. *Service of notice and orders.*—Every notice or order in relation to a tenement house or dwelling house shall be served five days before the time for doing the thing in relation to which it shall have been issued. Such service shall be upon the person, if any, whose name has been filed with the department of health in accordance with the provisions of section 92 of this ordinance, and if no such name has been filed, then such service shall be upon the owner, agent, or other person or persons having control of such tenement house.

SEC. 94. *Enforcement.*—The health commissioner is hereby charged with the enforcement of all the provisions of Chapter IV of this ordinance relative to the maintenance of tenement houses and dwelling houses and with the preliminary examination of plans for the construction or alteration of tenement houses or dwelling houses or the alteration or conversion of buildings for use as tenement houses or dwelling houses, with a view to certifying to the building inspector as to the lighting, ventilation, or sanitation of such houses. The building inspector is hereby charged with the enforcement of all of the provisions of this ordinance except those contained in Chapter IV thereof. The health commissioner shall cause periodic inspection to be made of all tenement and dwelling houses to ascertain whether any violations of this ordinance are being committed as to lighting, ventilation, overcrowding, and sanitation; and shall cause prosecutions of all violations to be instituted. He shall cause every tenement house to be so inspected at least once in every three months. Each of said departments shall keep and preserve as to each such building a complete and permanent record of all inspections, permits, and orders issued pursuant to this ordinance.

SEC. 95. *Exception.*—In case of a building which is hereafter erected or is altered or remodeled to be a tenement house or dwelling house within the fire limits of the city of Duluth and of which 75 per cent of the first story is devoted or to be devoted exclusively to business purposes none of the provisions of this ordinance shall apply to the first story of such house: ***Provided***, That the following chapters and sections shall apply to the house as a whole: Chapter I, sections 8, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 42, 49, 50, 52, 53, 54, 55, 56, 57, 59, 66, 70, 71, 72, 73, 75, 76, and 86, and Chapter VI: *Provided further*, That the remaining sections

shall apply to all stories except the first story as if the next story above were the first story and that all rooms on the ground floor which are used or to be used for living purposes shall conform in every respect to the provisions of this ordinance with respect to individual rooms in tenement houses or dwelling houses.

SEC. 96. *Ordinances repealed.*—All ordinances and parts of ordinances, so far as inconsistent with the provisions of this ordinance, are hereby repealed.

HOBOKEN, N. J.

Milk—Production, Care, and Sale. (Ord. Bd. of H, June 25, 1912.)

1. No milk shall be received, held, kept, offered for sale, sold, or delivered in the city of Hoboken without a permit in writing from the board of health, and subject to the conditions thereof, and in accordance with the requirements of this ordinance. This permit shall be renewed on or before the first day of each year and may be suspended or revoked at any time for just cause.

2. No milk which has been watered, adulterated, reduced, or changed, in any respect by the addition of water or other substance, or by the removal of cream, shall be brought into, held, kept, offered for sale, or sold at any place in the city of Hoboken, nor shall any one keep, have, offer for sale, or sell in the said city any such milk.

The term "adulterated," when so used in this section means:

First. Milk containing more than 88½ per cent of water fluids.

Second. Milk containing less than 11½ per cent of solids.

Third. Milk containing less than 3¼ per cent of fats.

Fourth. Milk drawn from animals within 15 days before or 5 days from parturition.

Fifth. Milk drawn from animals fed on distillery waste, or any substance in a state of fermentation or putrefaction, or any unhealthy food.

Sixth. Milk drawn from cows kept in a crowded or unhealthy condition.

Seventh. Milk from which any part of the cream has been removed.

Eighth. Milk which has been adulterated with water or any other fluid, or to which has been added, or into which has been introduced any foreign substance whatever.

Ninth. Raw milk if sold as pasteurized or pasteurized milk when sold as raw, or milk that does not comply with section C, article 8, of this ordinance.

3. No milk which has been transported or stored in an unclean manner or place shall be sold or offered for sale in the city of Hoboken, and the cans, dippers, tubs, and other utensils used in the storing, sale, or handling of milk shall be kept free from rust and dirt and only seamless dippers shall be used.

4. All premises whereon milk is produced or handled for sale or distribution in the city of Hoboken shall be open to this board for inspection at any time.

5. Any milk found to be adulterated, either by the addition of water or other substance, or which has been brought into or is held or offered for sale in the city of Hoboken, contrary to the provisions of sections 2 and 3 of this ordinance, may be seized and destroyed by any inspector or other officers of the board authorized to inspect milk.

6. No person or persons, partnership, corporation, or company shall hereafter engage in the sale of or expose for sale milk within the city of Hoboken without first having filed with the board of health a true and complete statement, duly verified, of the locality from which all the milk they handle is produced; a complete list of the persons from whom the said milk is purchased; a complete list of the localities from which ice for cooling purposes is obtained; and if at any time the place at which said milk is produced or the persons from whom the said milk is purchased, or the locality from which said ice is obtained be changed, the said board shall be notified immediately. At any time within 3 days of the receipt of a request thereof, any person engaged in the sale of milk in Hoboken shall furnish said board with a true and complete list, duly verified, of all persons to whom milk is regularly sold or delivered.

7. That there shall be paid for the issuing of all permits mentioned in section 1 of this ordinance the sum of $2 by the party or parties, partnership, company, or corporation obtaining same, and each individual, depot, store, wagon, or dairy in which milk is stored or offered for sale shall have a separate permit.

8. *Milk.*—(*a*) Samples of milk shall be furnished this board by any producer or dealer at any time upon proper payment therefor.

(*b*) Milk found to contain over 500,000 bacteria per cubic centimeter on two or more different days will be excluded from Hoboken until satisfactory evidence is shown that the milk may be reasonably expected to contain less than this number of bacteria.

(*c*) No pasteurized milk shall be sold in the city of Hoboken unless it has been held at a temperature no lower than 140° for at least 20 minutes, 150° for 10 minutes, or 160° for 5 minutes. Any milk that has been subjected to heat at a lower degree of temperature for a shorter period of time must be labeled distinctly "Heated milk." All pasteurized milk must be conspicuously labeled "pasteurized milk," and such label must also state degree (temperature and length of exposure at that temperature) and date of pasteurization.

(*d*) No buttermilk shall be sold in the city of Hoboken unless it is conspicuously labeled "Buttermilk."

(*e*) No substance or compound shall be added to any milk which is to be exposed or offered for sale, and no substance shall be subtracted therefrom.

(*f*) No milk shall be sold in Hoboken which is obtained from a dealer who handles in part a supply not approved by this board, and no person shall deliver or offer for sale in the city of Hoboken any milk unless the entire supply which he handles complies with the requirements herein set forth.

(*g*) No milk shall be delivered, stored, or transported at a temperature exceeding 50° F.

(*h*) No ice which is obtained from a source which is contaminated or which is so situate that it may become contaminated shall be used for cooling milk.

9. No cream shall be sold, exposed for sale, or delivered within the city of Hoboken unless it is produced and handled in accordance with the requirements set forth for the handling of milk.

10. The penalty for the violation of any of the provisions of this ordinance shall be $25 for each offense, and each day during which violation is allowed to exist shall constitute a separate and distinct offense.

11. All ordinances and parts of ordinances and all sections of the sanitary code of the board of health not consistent with the provisions of this ordinance are hereby repealed.

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